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THE

MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—12TH YEAR. SYDNEY: SATURDAY, JANUARY 3, 1925. No. 1.

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Table of Contents

	PAGE.
ORIGINAL ARTICLES—	
"Acute Cranial Injuries and Their Treatment, by H. SKIPTON STACY, M.D., Ch.M.	1
"Fracture of the Skull in Children," by P. L. HIPSLEY, M.D., Ch.M.	5
"Twenty-one Months with Deep Therapy Treatment," by A. T. NISBET, M.B., Ch.M., D.P.H.	9
REPORTS OF CASES—	
"Spindle-Celled Sarcoma of the Broad Ligament," by R. F. MAY, M.B., B.S.	15
REVIEWS—	
Practical Radiology	15
ANALYTICAL DEPARTMENT—	
"Lactogen"	16
LEADING ARTICLES—	
A Retrospect	17
ABSTRACTS FROM CURRENT MEDICAL LITERATURE—	
Pædiatrics	20
Orthopædic Surgery	21
BRITISH MEDICAL ASSOCIATION NEWS—	PAGE.
Scientific	22
Nominations and Elections	24
CORRIGENDUM	24
THE MEDICAL BENEVOLENT FUND OF NEW SOUTH WALES	24
OBITUARY—	
George Rothwell Wilson Adam	24
UNIVERSITY INTELLIGENCE—	
University of Sydney	24
CORRESPONDENCE—	
Köhler's Disease	25
The Spahlinger Treatment of Tuberculosis	25
MEDICAL APPOINTMENTS	26
BOOKS RECEIVED	26
MEDICAL APPOINTMENTS VACANT, ETC.	26
MEDICAL APPOINTMENTS: IMPORTANT NOTICE	26
DIARY FOR THE MONTH	26
EDITORIAL NOTICES	26

ACUTE CRANIAL INJURIES AND THEIR TREATMENT.[1]

By H. SKIPTON STACY, M.D., Ch.M. (Sydney),
Honorary Surgeon, Sydney Hospital.

THIS paper is not supposed to be an exhaustive study, but largely an attempt to correlate clinical signs and symptoms (observed in the accident wards of Sydney Hospital over a considerable number of years) with the lesions actually found on the operating table or in the *post mortem* room. It is also an attempt to seek for these very serious accidents a method of treatment founded on scientific principles and justified by clinical results, treatment that not only saves life, but restores the patient to a normal state of health and does not leave him subject to frequent headaches and dizziness, for these are sequelæ often associated with a cranial injury as treated in the old recognized way with rest, sedatives and so forth.

J. B. Murphy used to lay down a good general rule that the period of unconsciousness corresponded in a general way to the gravity of the cranial lesion. Though there may be exceptions, I have found that this is mostly true and accordingly have acted on it. X-ray examination occasionally reveals a fracture of the skull in a patient with no other symptom. How easily these patients could be sent out of hospital! One can imagine the righteous indignation of the public and the evening press at the gross carelessness that would allow this, and yet it may quite easily happen. We know that it is not the fracture which counts for seriousness, but the injury to the underlying organ.

Probably the factor that has contributed most of the confusion in the understanding of head injuries, is the attempt on the part of authors of text-books to classify them in water-tight compartments, whereas they so frequently merge from the condition of concussion into that of compression or of irritation. Compression has too often been taken to mean extra-dural compression, whereas it is much more frequently intra-dural. Irritation also practically always indicates that there is some cerebral laceration. This makes the patient restless and irritable when disturbed; he lies with legs and thighs flexed, using bad language when moved, he may call out and disturb everybody in the neighbourhood. But in addition to this he is also suffering from signs of compression which are the result of the outpouring of blood and interference with the circulation of the cerebro-spinal fluid. These do not contribute to noise, but they may very materially hasten death and need treatment.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on October 30, 1924.

The Anatomy and Physiology of the Cerebro-Spinal Fluid.

Before considering the subject further it would be better to discuss the anatomy and physiology of the cerebro-spinal fluid. In doing so I shall draw largely from an article by Jackson.[1] The cerebro-spinal fluid is probably secreted in the ventricles from the chorioid plexus. The fluid finds its way from the lateral ventricle through the foramina of Monro to the third ventricle and thence along the aqueduct of Sylvius to the fourth ventricle. Posteriorly is the foramen of Majendie and in each lateral recess the foramen of Luschka through which the fluid escapes to the large cisterns beneath the arachnoid.

These reservoirs have been named according to their location. There are cisterns of the Sylvian fissure, optic chiasma, inter-peduncular space, pons and cerebro-medullary region. They contain normally about sixty cubic centimetres of fluid, but in pathological conditions may contain two or three times that amount. Another thirty to sixty cubic centimetres are present in the spinal portion. The fluid rises through the *incisura tentorii* to be distributed over the cortex of the cerebrum. This is constantly being absorbed, mostly by the arachnoidal villi into the dural sinuses when there is no obstruction to its circulation. It serves to dilute and carry off the metabolic waste products of the brain. The cerebral and spinal sub-arachnoid systems are freely connected with each other.

A slight swelling or hæmorrhage of the cerebrum or mid-brain blocks the cerebral sub-arachnoid spaces and the fluid cannot be absorbed along its natural channels. The fluid no longer rises above the tentorium, but collects in the basal cisterns and in the ventricles; stasis results. The enlargement of the basal cisterns forces the mid-brain up and occludes further the narrow sub-arachnoid spaces in the *incisura tentorii*. The enlargement of the lateral ventricles above the tentorium forces the cortex of the brain still more against the dura and unless the excess of fluid is withdrawn from below the tentorium, a dry and flattened cortex is found at autopsy.

The medulla suffers from the direct pressure of the fluid in the basal cisterns and this is evidenced by symptoms of vomiting, bradycardia, high blood pressure and stertorous respiration. Thus we see that a vicious circle is set up, until the resultant pressure rises so high that death follows.

For years before reading Jackson's article I had extensively employed lumbar puncture in the treatment of cranial injuries. Now I understood why it was indicated and why it was so successful.

Ætiology.

Though in many instances the patients have fallen from a height, still there have been a great number who were merely knocked down, the commonest offender being the motor vehicle in the streets.

Varieties of Cranial Injury.

Concussion.

Concussion gives rise to symptoms that are transient and are not associated with unconsciousness of more than a few hours' duration. By concussion I refer to that condition in which, if it were possible to examine the brain, no obvious lesion would be found with the naked eye.

Contusion.

The next condition in order would be contusion of the brain in which, as follows from the description of the cerebro-spinal circulation, there would be some interference with its onward flow and absorption. Hence accumulation at the base and symptoms of medullary compression varying in intensity occur. Unconsciousness is always more prolonged than in concussion. As the patients recover, they usually complain of headache and this is frequently intense. Contusion as well as the next variety, laceration, may occur quite independently of a fractured skull, though they are frequently associated. Like it, they may be present at two opposite poles of the cerebral hemispheres, due to *contrecoup*. Accompanying the contusion there may be slight hæmorrhage from rupture of vessels.

Laceration.

The next and most severe lesion is laceration of the brain. In this condition brain substance is torn and hæmorrhage is naturally more free. Restlessness and irritability are prominent and in addition there are symptoms of compression from the accumulation of blood and from interference with the cerebro-spinal fluid circulation. This is signified by prolonged unconsciousness and slowing of the pulse. If the breathing should become stertorous, then the outlook is not good.

Extra-Dural (Middle Meningeal) Hæmorrhage.

If there is hæmorrhage from the middle meningeal artery, the classical history will probably be obtained. Primary unconsciousness will occur, the patient will recover only to lapse again within a few hours into unconsciousness, deeper than before and accompanied by flaccid paralysis of the opposite arm and probably the leg and face. There will be fixed dilatation of the pupil on the side of the lesion caused by pressure on the third nerve at the base of the brain. The pulse soon becomes slow and the breathing stertorous.

Depressed Fractures.

There is nothing new to be added to the subject of depressed fractures. It is merely necessary to emphasize the great resemblance that hæmatoma may have to a depressed fracture. If there is any doubt as to the diagnosis, it is better to operate. If the depression is accompanied by severe intracranial injury, it may be wise to defer operation. Recently a patient died quite suddenly several hours after a depressed fracture of his frontal bone had been raised. It was evident that this was not his only lesion.

Diagnosis.

Lumbar Puncture.

Lumbar puncture yields clear fluid under increased pressure in an extra-dural hæmorrhage unless there is an associated sub-dural injury in which case the fluid may be blood-stained. There is a convenient mercurial manometer, manufac-

tured by Mueller and Company, of Chicago, and imported by Allen and Hanbury. I have frequently used this to measure the pressure, but I do not think that a manometer is absolutely essential. The normal intra-cranial pressure in the adult is from seven to nine millimetres of mercury; in cranial injuries it may rise to twelve, sixteen or even twenty millimetres. In sub-dural injury, when the patient is seen early, the diagnosis of brain injury is made by lumbar puncture and the finding of blood or an increased tension of the cerebro-spinal fluid or both. The presence or absence of linear fracture is of secondary importance. The general symptoms of slow pulse, embarrassed respiration, papillœdema and unconsciousness appear later if tension is not relieved. They need not appear at all if tension is kept within normal limits by lumbar puncture. These text-book signs are as misleading as those other text-book signs often given under the heading of ruptured gastric ulcer; the signs given are really those of peritonitis at a stage when it is too late to interfere. There is much for which some authors of text-books have to answer.

Pulse.

The pulse is at times very variable. Its rate may alter from sixty to one hundred within twelve hours. As a diagnostic sign the pulse rate is unreliable. One observer records that only in sixty-five out of one thousand cases of fracture of the skull was the average pulse rate below seventy.

General Blood Pressure.

Cushing and others[2] strove to prove that the general blood pressure was an accurate index to intra-cranial tension, but their dicta are not to be relied upon in acute cranial injuries. General blood pressure may be low for many hours owing to shock, its rise is often slow and too late to serve as an indication for treatment. I have never been guided by it.

Examination of the Fundi.

Examination of the fundi is often impossible owing to the patient's restlessness. In any case papillœdema is a late sign.

Spasticity of the Limbs.

Spasticity of the limbs has generally been found by me to be due to a sub-dural and flaccidity to an extra-dural lesion. The exception has been that in fatal sub-dural injuries the limbs were nearly always flaccid.

Convulsions.

Convulsions are more frequent in children. The history of a recent case is worth quoting.

A young child became unconscious half an hour after an accident and was admitted to hospital with convulsions. Lumbar puncture was performed, the cerebro-spinal fluid was clear and under increased pressure. The pulse rate increased and consciousness was restored almost immediately. Slight relapse occurred next day, but from this on recovery was uninterrupted.

Patients that have been traced for several years, appear to have had no further trouble.

Radiological Examination.

In the stages of recovery, when the patient is quiet enough, a radiographic examination is often a help. But it needs skilful interpretation. It is not difficult to mistake a suture line for a linear fracture, but the former is more serrated. The grooves for the meningeal artery may occasionally cause confusion. Radiography is of no avail in fractures of the base.

Prognosis.

Increasing intra-cranial pressure shows that the lesion is progressing unfavourably, a decreasing pressure is favourable. Continued increased pressure indicates chronic hypertension which, if not relieved, leads to symptoms known in our law courts as traumatic neurosis. They are, however, evidences of a gliosis of the cortex. I saw this type of case quite frequently until I resorted to lumbar puncture. The patients came back to the hospital almost universally complaining of headache and giddiness on attempting to resume their normal occupation. They are apt to get little sympathy from the insurance company's medical officer and yet I have no doubt that in a large proportion of cases their complaint is a genuine one and not functional in nature. Too often we put down as functional what we do not comprehend.

Complications.

Meningitis.

Meningitis occasionally occurs, but not often. Two most remarkable cases occurred within a few weeks of one another. One patient had been under my own care quite six or eight months previously for a fracture of the anterior fossa of the skull. He was taken ill in the street one day and died of septic meningitis originating in the anterior fossa of the skull. The other patient was one on whose body Dr. Palmer did a *post mortem* examination about the same time. I think that the injury in that instance was also an old fracture of the anterior fossa. It is practically impossible to make the nose aseptic if it should be contaminated; the auditory meatus is under much better control.

Cerebral Abscess.

Cerebral abscess may be slow in forming and very obscure in its signs and symptoms. I have known a patient live for many years with an abscess resulting from a fractured skull.

Blood Cyst.

Blood cyst is an occasional sequela on the cortex. It may subsequently cause traumatic epilepsy.

Escape of Cerebro-Spinal Fluid.

Escape of cerebro-spinal fluid from the orifices is not necessarily grave. I have seen it in quite mild cases.

Arterio-Venous Aneurysm.

Arterio-venous aneurysm occasionally occurs in fractures of the middle fossa. The internal carotid artery and the cavernous sinus are involved. Proptosis of the eye is present and also *tinnitus aurium*. Ligation of the internal carotid artery greatly improves the condition.

Blindness.

Blindness occasionally occurs from contusion or laceration of the visual cortical area in the occipital region. Considerable improvement of vision, even total recovery may result after some weeks if the lesion is not too severe.

Injury to Cranial Nerves.

As J. B. Murphy always emphasized, section of a cranial nerve always means permanent loss of function, owing to the absence of a neurilemma from which regeneration may take place. Involvement of the first, second, fifth, eighth, ninth, tenth, eleventh and twelfth cranial nerves appears to be uncommon, for I cannot recall many cases. Involvement of the ocular muscles seems to be most common of all, especially the third nerve as shown by dilatation or contraction of the pupil which is usually fixed. The lesion appears in most cases to be a hæmorrhage around the nerve and to disappear. Occasionally, however, it is due to involvement in the fracture of the middle fossa and in this case the strabismus and mydriasis are permanent. The prognosis may generally be determined one way or the other after an interval of several weeks. Next to the ocular nerves involvement of the seventh is the most common. If recovery commences in a few weeks, then it will probably be complete, but permanent paralysis occasionally follows involvement in a middle fossa fracture.

Treatment.

In the treatment of cranial injuries a depressed fracture must first of all be excluded. If present, it is in most instances wise to operate at once, though if associated injuries, either cerebral or elsewhere, are severe, it may be advantageous to wait.

If the patient is unconscious for several hours, undoubtedly the best treatment is lumbar puncture. If the patient is very restless, assistance will be needed to hold him, otherwise the needle may be broken in the middle of the operation. Local anæsthesia is advisable unless the patient is deeply unconscious. Gas anæsthesia has been recommended for the very restless, but so far I have not had the courage to use it for fear of death under anæsthesia. Although I have performed lumbar puncture on many hundreds of occasions, I fail unaccountably at times to secure a flow although the needle is apparently in the theca. Probably more leisurely introduction under anæsthesia would be successful. I generally withdraw twenty to thirty cubic centimetres, in some cases more. Sometimes I have regulated the amount by the manometer, in most instances not. When lumbar puncture is undertaken in the early stages, the fluid in the majority of instances contains blood. The amount of blood subsequently becomes less and less.

In performing lumbar puncture the operator introduces the needle into the fourth lumbar space in the middle line. The patient is on a firm mattress on his side with his thigh flexed. In bad cases the operation is repeated at intervals of six hours, in the less severe intervals of twenty-four hours or so are adopted.

Under this treatment consciousness will gradually return or if the patient is conscious, headache will soon disappear. The presence of unconsciousness or of mental confusion or of headaches is a sign for the continuance of lumbar puncture. But more than three or four are seldom needed. There is a class in which very severe injury to the brain is accompanied by a cerebro-spinal fluid pressure of twenty to forty millimetres of mercury. For these Jackson and Rodman and Neubauer[3] suggest subtemporal decompression, but Jackson is not sanguine that it is as good as lumbar puncture. My experience of this operation is not comforting. I would go so far as to say that I have never seen a patient die in spite of lumbar puncture who would have been saved by decompression. Undoubtedly decompression has hastened if not in some instances caused death; presumably the anæsthetic is a contributing cause. The history of a recent case in which I failed to get fluid by lumbar puncture, was rather illuminating. I performed sub-temporal decompression. As soon as the dura was incised, the cerebro-spinal fluid spurted out under great pressure for about five seconds. The bulging cortex then filled the incision and the flow stopped. The operation was of no avail and the patient died a few hours later.

Experiments on animals show that the slowing of the heart rate and the change in blood pressure are phenomena associated with medullary compression and are therefore likely to be late manifestations when the injury lies above the tentorium.

The pathogenesis of acute injury to the brain demonstrates that the principle effect of œdema of the brain and hæmorrhage is an interference with the absorption of the cerebro-spinal fluid by the usual paths. This sets up the vicious circle and causes further pressure on the brain by the accumulating fluids in the basal cisterns below the tentorium and in the lateral venericles. The brain is pressed upward against the dura and a cortical anæmia is produced. If this anæmia is unrelieved, it quickly leads to gliosis and causes lasting changes in the character, disposition and mentality of the patient, if he recovers from the brain injury. Repeated lumbar puncture relieves this pressure and restores the normal path of absorption.

I have never seen any ill results follow lumbar drainage in acute cranial injuries. Sudden death is said occasionally to have followed lumbar puncture in chronic conditions such as cerebral tumour. Jackson recommends withdrawal of the needle after thirty cubic centimetres have been removed. I have withdrawn as much as forty cubic centimetres.

Of course the initial shock is treated in the usual way. The patient is kept in bed for from three to four weeks, the period varying with the gravity of his condition. After he leaves hospital he is sent if possible to a convalescent hospital, not infrequently he goes to friends in the country. The city is absolutely forbidden. The noise and bustle of city life are upsetting to these people. Occasionally acetosalicylic acid, bromides and so forth are given, but

they are not often needed nowadays. Formerly these patients were dosed perhaps for months.

Operation must of course be performed as soon as middle meningeal hæmorrhage is suspected. If the trephine disc is taken out about 4.3 centimetres (one and three-quarter inches) behind the external angular process of the frontal bone and the same distance above the zygomatic process, it will in most instances be not far from the bleeding point. The hole will need to be enlarged by *rongeurs*. The blood clot may be of enormous size and the bleeding point may not be located. In these cases it is best to ligate the external carotid artery in the neck and to pack some gauze round the wound in the distribution of the middle meningeal artery over the dura. It is probably a wise procedure in most instances to do preliminary ligation of the external carotid. It is at the same time to be remembered that it is quite easy to ligate the internal instead of the external carotid artery.

Analysis of Fatal Cases.

Eleven patients under my care with fracture of the skull have died during the last twelve months. From the analysis of their case sheets I wish to make a few observations.

More than half of this number died within a few hours of admission to hospital, several lived for two days and one lived as long as five days.

A rapid pulse was usually accompanied by a rise of temperature and this generally took place in the final stages. Some patients, however, died with a slow pulse. These generally succumbed within an hour or so of admission. They generally had a sub-normal temperature and slow respiration. Probably respiratory preceded cardiac failure.

In all the patients who died, stertorous breathing was a feature. In some the respiration was irregular and of the Cheyne-Stokes variety. I do not remember having seen recovery take place in a patient with a fractured skull who had Cheyne-Stokes type of respiration. In many instances the respiratory rate was diminished.

In regard to temperature I cannot draw definite conclusions. As far as I know heat regulation is as yet imperfectly understood. Probably most of the sub-normal temperatures on admission were due to shock.

The pulse and respiration variations are almost certainly due to interference with the medulla and its vital centres by the presence of blood accumulating in its vicinity as a result of the intra-cranial trauma. This would cause a rise in the intra-cranial pressure. Presumably the centres are first stimulated and later paralysed, one sometimes before the other.

The reflexes were noted in every case. Sometimes knee jerks are present and sometimes absent, sometimes they are unequal on either side. The plantar reflex is occasionally of the extensor (Babinski) type. I have never been able to satisfy myself that I derived information of any value from the recording the reflexes. I understand that Church has said that the Babinski phenomenon is of no value except in a conscious adult. I am inclined to agree with him.

References.

(1) H. Jackson: "The Management of Acute Cranial Injuries by the Early Exact Determination of Intra-Cranial Pressure and Its Relief by Lumbar Puncture," *Surgery, Gynecology and Obstetrics*, April, 1922, page 494.

(2) Harvey Cushing: "Experiments and Clinical Observations Concerning States of Increased Intra-Cranial Tension," *The American Journal of the Medical Sciences*," 1902, Volume CXXIV., page 375.

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FRACTURE OF THE SKULL IN CHILDREN.[1]

By P. L. HIPSLEY, M.D., Ch.M.
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CHILDREN are particularly liable to injuries, owing to their peculiar habits of indulging in all kinds of dangerous pursuits, such as jumping off moving vehicles and so forth. One would therefore expect to find fracture of the skull quite common in them. During the school holidays a considerable number of children with fractured bones are admitted to the Royal Alexandra Hospital for Children and amongst them is a fair proportion of fractures of the skull. I have examined the hospital records and have tabulated all the patients suffering from fractures of the skull who were admitted to the hospital during the two years commencing July, 1922, and this paper is based mainly on an analysis of these cases.

It is often taught that fracture of the skull is not common in children, owing to the elasticity of the bones of the vault, but with the systematic use of X-rays in all head injuries it has become evident that fracture of the bones of the vault is very common and fracture of the base of the skull in children is comparatively rare. Judging from the patients seen in hospital, whose symptoms are entirely absent by the time they come into hospital, one would presume that simple fissured fracture must frequently go unrecognized.

As one would expect from the more delicate nature of the skull bones in children, a fracture will result from a comparatively trivial injury, but such is relatively less serious than in adults. Owing to the elasticity of the bones fractures do not have the same tendency to extend downwards and involve the base, as in adults. The prognosis therefore is better, the mortality is lower and severe after-effects are not as common as in adults. The older the child, the more closely do the symptoms and progress of the case resemble those of adults.

Since the chief function of the skull is to protect the brain, I would like to mention the anatomical features which have an important bearing on this

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on October 30, 1924.

TABLE SHOWING PATIENTS ADMITTED TO ROYAL ALEXANDRA HOSPITAL FOR CHILDREN DURING TWO YEARS, JULY, 1922, TO JULY, 1924.

No.	Date	Name.	Age.	Sex.	Cause of Injury.	Diagnosis.	Symptoms and Treatment.	Result.
1	8/7/22	I.S.	8 years ..	F.	Knocked down by motor car	X-ray, simple fissured fracture, left frontal and parietal	Semi-conscious; irritable; sub-periosteal hæmatoma in left frontal region	Recovery
2	26/9/22	M.G.	9 years ..	M.	Tripped over, struck head on ground	Simple fissured fracture in frontal region	Severe vomiting; drowsy; pulse 80, irregular	Recovery
3	25/10/22	G.L.	11 years ..	M.	Fell off tram	Depressed fracture, parietal	Headache; vomiting; drowsiness; pulse 80; temperature 36.2° C. (97° F.); depression which involved outer table, only was elevated after reflecting scalp flap	Recovery
4	25/8/22	P.H.	4 years ..	F.	Knocked down by tram car	Compound depressed fracture, right frontal	Semi-conscious; temperature 35.6° C. (96° F.); pulse 76; depressed fragment elevated	Recovery
5	19/12/22	M.R.	6 years ..	F.	Fell against winch on board ship eight weeks ago	Simple fissured fracture of left parietal	Unconscious for some time; has suffered from headaches since	Recovery
6	2/2/23	J.G.	8 years ..	M.	Fell off motor car	Simple fissured fracture of right parietal	Drowsiness and vomiting; pupils equal, react to light and accommodation; temperature, 36.2° C. (97° F.); pulse 94	Recovery
7	5/3/23	B.S.	1 week ..	M.	Birth fracture	Depressed fracture, left parietal	No symptoms; depression elevated after reflection of scalp flap	Recovery
8	22/5/23	B.S.	2 weeks ..	M.	Birth fracture	Depressed fracture of parietal	No symptoms; elevated through open incision	Recovery
9	29/6/23	A.S.	12 years ..	M.	Fell off fence	Stellate simple fissured fracture, right parietal	Drowsy and irritable; vomiting blood-stained material; bleeding from right external auditory meatus; pulse 100; temperature, 36.2° C. (97° F.)	Recovery
10	26/5/23	J.S.	2 years ..	F.	Tripped and fell, striking head on pavement	X-ray report: Linear fracture of parietal with some depression	Conscious, but irritable; temperature, 36.2 C. (97° F.); pulse 88. Treatment: Fracture examined through open incision, but no depression found	Recovery
11	31/7/23	D.S.	5 years ..	F.	Fell and struck head on pavement one week ago	Simple fissured fracture, upper portion of right parietal	Persistent headache; vomited for two days after lapse of three days; alternating periods of drowsines and irritability; subpericranial hæmatoma over right parietal; temperature, 37.2° C. (99° F.); pulse 84	Recovery
12	22/8/23	C.D.	3 months ..	M.	Fell off table	Simple fissured fracture of right parietal bone	Large hæmatoma over right parietal; pulse 120; temperature, 36.6° C. (98° F.)	Recovery
13	25/10/23	M.M.	1 month ..	F.	Fell from perambulator	Fracture of parietal	Hæmatoma over right parietal; child otherwise normal	Recovery
14	1/12/23	C.D.	4 years ..	M.	Fell and struck head on pavement	Simple vertical fissured fracture, right parietal	Unconscious ten minutes; drowsy since; irritable; vomiting; pulse 100, irregular; apparently normal twenty-four hours after injury	Recovery
15	4/11/23	L.S.	3 years ..	M.	Fell off verandah	Compound depressed frac-	Unconscious for about ten minutes; vomit- (96.4° F.); pulse 98	Recovery
17	28/9/23	T.M.	7 years ..	M.	Struck on head by engine	Compound depressed fracture	Quite unconscious on admission to hospital eight hours after injury; knee jerks slug-	Recovery

15	4/11/23	L.S.	3 years ..	M.	Fell off verandah	Compound depressed frac-	Unconscious for about ten minutes; vomit- after injury	Recovery
17	28/9/23	T.M.	7 years ..	M.	Struck on head by engine	Compound depressed fracture	(36.4° F.); pulse 98 Quite unconscious on admission to hospital eight hours after injury; knee jerks sluggish; plantar reflex, flexion; pupils equal, react to light and accommodation; lumbar puncture, 12 cubic centimetres of blood-stained fluid withdrawn. Treatment: Depressed fragments elevated after enlargement of wound	Recovery
18	2/11/23	C.D.	5 weeks ..	F.	Fell from perambulator	Simple fissured fracture, parietal and occipital bones	Hæmatoma over occipital and temporal regions; normal otherwise	Recovery
19	18/12/23	J.M.	1 10/12 years	M.	Fell from balcony on to hard pavement, about three metres (ten feet)	Tri-radiate fracture involving right parietal and left frontal	Unconscious for a few minutes; drowsy since; vomiting; temperature, 36.2° C. (97° F.); pulse 92. Treatment: Fracture examined through open incision; no depression	Recovery
20	11/1/24	R.M.	3 years ..	M.	Fell from balcony, about 3.6 metres (twelve feet)	Simple fissured fracture of left parietal, extending from vertex almost to base	Semi-conscious; vomiting blood; sub-aponeurotic hæmatoma; ecchymosis in left eyelid after forty-eight hours; temperature, 36.2° C. (97° F.); pulse 90	Recovery
21	30/1/24	C.W.	4 years ..	M.	Knocked down by tram whilst riding bicycle	Compound depressed fracture of the vault	Child quite conscious; pupils equal, react to light; no paralysis; temperature, 36.2° C. (97° F.); pulse 92. Treatment: Depressed fragment elevated after enlargement of scalp wound	Recovery
22	17/2/24	L.B.	8 years ..	M.	Fell from a horse	Fracture of base of skull	Unconscious; hæmorrhage and cerebro-spinal fluid from ear; pupils equal, react to light; knee jerks normal; no Babinski reflex; temperature, 37.2° C. (99° F.); pulse 84, irregular; temperature rose to 39.6° C. (103.4° F.) after forty-eight hours; child died on the third day after injury	Death
23	20/6/24	N.W.	6 years ..	F.	Knocked down by motor car	Fractured base, right side of occipital bone	Bleeding from right ear; not unconscious; severe headache; temperature subnormal; pulse 100, irregular; pupils equal, react to light; knee jerks exaggerated; double Babinski type of reflex; temperature, 36.2° C. (97° F.); pulse 100	Recovery
24	6/6/24	E.B.	3½ years ..	F.	Fell from couch on to tiled verandah	Simple fissured fracture, parietal	Vomiting twelve hours after fall; not unconscious; sub-pericranial hæmatoma; temperature, 36.2° C. (97° F.); pulse 106; sent into hospital with diagnosis of depressed fracture	Recovery
25	14/6/24	N.M.	5½ years ..	F.	Fell off verandah	Simple fissured fracture of left parietal and fractured clavicle	Was not unconscious after injury, but vomited for two days; violent headache for several days; sub-periosteal hæmatoma, left parietal region; temperature, 36.6° C. (98° F.); pulse 76	Recovery
26	15/7/24	E.C.	5½ years ..	M.	Knocked down by motor car five days before admission	Simple fissured fracture of left parietal	Quite conscious and intelligent; slight headache; hæmatoma, left temporal region; temperature, 36.6° C. (98° F.); pulse 80	Recovery
27	10/7/24	E.H.	3 years ..	M.	Knocked down by motor car	No X-ray examination made; probably fracture of left parietal	Quite conscious when brought to hospital shortly after accident; parents took child home against advice and thirty hours later brought child back moribund; there was a large hæmatoma over left parietal bone	Death

point. The following facts bearing on this matter are mainly taken from the latest edition of Gray's text-book on anatomy. The rounded shape of the skull, its elasticity and the fact that it is made up of a number of separate bones all tend to minimize the risk of fracture. After severe blows on the vault the vibrations are transmitted to the base and are carried to the region of the *sella turcica* by two buttresses, one between the anterior and middle and the other between the middle and posterior cranial fossæ. This locality has been termed the "centre of resistance" and here the sub-arachnoid cavity is dilated and the cerebro-spinal fluid acts as a water cushion. The main differences between the skulls of children and adults are as follows. At birth the skull is large in proportion to other parts of the skeleton and the base is short and narrow in proportion to the vault. The frontal and parietal eminences are more prominent and there are six fontanelles present, namely anterior and posterior in the middle line and two lateral on either side. The skull grows rapidly from birth to the seventh year and then slowly until about puberty, when it again grows rapidly in all directions, but particularly in the frontal and facial regions.

Other peculiarities of the skull in children are the thinness and elasticity of the bones, the fact that diploe is absent, air sinuses are not well developed and the *dura mater* is more closely adherent to the bone in young children. The presence of intersutural membranes allows a small amount of movement at the junction of the bones and so helps to protect them from fracture.

Symptoms.

These of course vary with the severity of the injury. Where there is a simple fissured fracture of one of the bones of the vault, as in most of the cases in the series examined, there is a short period of unconsciousness, followed by a longer period of drowsiness, giddiness and vomiting. By the time the child reaches hospital, he is generally quite conscious and able to answer questions rationally. The temperature is always subnormal and the pulse rate slightly accelerated and very soft. There is generally a hæmatoma of the sub-pericranial variety over the site of the injury. It is this variety of cephal-hæmatoma that often leads to a diagnosis of depressed fracture when such does not exist, owing to the separation and thickening of the periosteum around the edge of the hæmatoma. Several patients in the series here recorded were sent into hospital with the diagnosis of depressed fracture and X-ray examination revealed a simple fissured fracture.

Probably in all these cases there is some degree of intra-cranial injury present and the children are frequently restless and irritable for a few days. But in most instances all these symptoms disappear in three or four days.

In cases of depressed fracture all the symptoms were more exaggerated and the period of unconsciousness lasted longer, but the children were generally quite conscious when brought to hospital. The pupils were generally equal and reacted to light and accommodation. The patellar reflex was usually exaggerated and the plantar reflex was in most cases flexor.

There was no occurrence of a rupture of the middle meningeal artery in any of the simple fissured fractures or in any of the patients who were operated on for depression. The only patient in the series in whom there might have been a rupture of the middle meningeal artery, was a child whose parents refused to leave it in hospital, as it seemed so well, but they brought it back moribund thirty hours later.

In adults it is frequently found that although a great number of wounds of the skull produce no objective indication of an organic lesion of the nervous system, yet they are accompanied by definite subjective disorders, but in children even these may be wanting or at any rate be very slight.

With a view to finding out whether there had been any after effects noticed by the parents after the children returned home, I wrote to the parents of sixteen of what appeared to be the children most seriously affected and asked whether there had been any complaint of headache or whether the children had had any convulsions or troublesome vomiting since returning home. I received ten replies which indicated that there had been no after effects attributable to the original injury. Although in several instances the children complained of occasional headache, it seemed to me that this was due to other causes, such as enlarged tonsils rather than to the old fracture.

Diagnosis.

In simple fissured fracture when the scalp is intact, X-ray examination is the only certain means of diagnosing fracture. When there is a scalp wound it is always advisable to examine carefully the underlying bone to make sure that there is not a fracture present as well. A suture line is sometimes mistaken for fracture, but the presence of bleeding along the line of a fracture should be remembered in distinguishing between these two. A depressed fracture is generally easily recognized, especially when there is a scalp wound as well. Simple depressed fracture with a sub-pericranial hæmatoma is not so easy to diagnose. In cases of doubt the point of a needle thrust through the scalp, at the edge of the suspected depression, will sometimes enable one to detect its presence. It is apparently difficult to detect slight depression by means of X-rays alone.

In cases of compound depressed fracture the presence of a wound in the scalp makes the diagnosis easy, but if wounds in the scalp are carelessly sutured, even these may be overlooked.

Lumbar puncture is sometimes of use in severe head injuries. In cases in which the injury has been severe enough to lacerate the membranes, the cerebro- spinal fluid is sometimes blood stained and in addition to its help in estimating the extent of damage the relief of pressure may lead to a temporary amelioration of the symptoms.

Treatment.

With perfect rest and quiet, low diet and the administration of small doses of calomel the

patients with simple fissured fracture make a complete recovery and few abnormal signs beyond tenderness along the line of fracture can be detected after a few days. It is better, however, to keep these children in bed for from three to four weeks. When there is any depression, it is necessary to elevate it early. In young infants in whom the bone is still very elastic, this can be easily accomplished with a suitable blunt pointed instrument introduced through a narrow groove, chiselled in the skull at the edge of the depression. Compound depressed fractures need similar treatment, except that the need for immediate elevation of the depressed fragment is more urgent. In the presence of a scalp wound the overlooking of a fracture is of course more serious than when such does not exist. I do not in this paper wish to deal with the operative treatment of the more serious injuries to the skull and brain. The treatment of such conditions does not differ in any way from the treatment of similar cases in adults.

Summarizing the cases of fractured skull, admitted to the Royal Alexandra Hospital for a period of two years, I find that there were twenty-seven patients so affected, admitted to hospital between July, 1922, and July, 1924. Of these seventeen were males and eight females, the sex of two infants was not recorded. There were twenty-five recoveries and two deaths. These are shown in the accompanying table. The position of the fracture was as follows: Parietal bone 15, frontal bone 4, frontal and parietal 1, parietal and occipital 1, base of skull 2, not recorded 4.

The variety was simple fissured in 18, simple depressed in 2, compound depressed in 6 and not recorded in 1.

TWENTY-ONE MONTHS WITH DEEP THERAPY TREATMENT.[1]

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THERE is a great difference between the present hard or deep ray now used and the old soft ray with a limit of about a nine-inch gap.

X-ray is an "ultra-ultra" violet ray and made up of three separate types of light which have been called α, β and γ. Of these the γ ray has the shortest wave length and thus can penetrate more deeply and in addition is the ray that causes the least erythema of the skin. The fact that this soft ray can now be practically isolated by passing the emanations from the X-ray tube through filters of copper and aluminium is the advance that makes deep therapy, so-called, so much more valuable than the old type.

That is about all I am going to say tonight about X-ray physics as I want to present to you the clinical side of about one hundred and sixty cases treated.

[1] Read at a meeting of the Queensland Branch of the British Medical Association on November 7, 1924.

Cost.

Everyone, patient and medical man alike, is interested in the question of cost of this treatment. It is expensive, but it must be realized that before a plant is installed and in running order £2,500 has been laid out which at 7% interest quite apart from depreciation, works out at £3 10s. per week. Add to this all the extra staff necessary, repairs, replacements and so forth and Coolidge tubes costing £86 apiece (none of which I have been able to use for more than two hundred and fifty hours and some considerably less) and you will understand that treatment for two hours each dose cannot be given at half a guinea a time.

If deep therapy machines can be placed into action more often than at present, since practically all conditions can be treated by their means, I think that the cost of treatment could be reduced by about 30%.

Treatment of Neoplasms and Other Lesions.

Uterus.

I have seen under the heading of tumours of the uterus fifteen, of which only three have been definitely diagnosed as arising in the *corpus uteri*, the remainder apparently arising from the cervix; but from the time the majority of the patients came for deep X-ray treatment, the growth had infected not only the uterine body, but the surrounding abdominal glands. I have therefore not had an opportunity of considering the different results in treatment between cancer of the cervix, as distinct from that of the body. Of these fifteen patients seven had had a laparotomy performed and the condition had been considered absolutely inoperable. These seven all manifested advanced infection and even after deep therapy one alone lived for more than six months. That one who was affected with one of the most advanced growths, was treated eighteen months ago and is still living, although I am afraid that during the last six weeks she has commenced once more to go down hill, still, however, not complaining of any pain and being generally quite comfortable.

One other patient after one dose refused further treatment on account of the intense X-ray sickness endured. This woman, however, had a gastric ulcer at the same time and this may have been the reason for the unusual severity of the discomfort felt.

Of the more successful cases, one patient with a large mass in the right fornix infecting the vaginal wall, who was rapidly becoming bed-ridden, is now over six kilograms in weight heavier than she was ten months ago, has no discharge and no pain. She has had ten months of freedom from worry, has been able to garden and had a very good appetite. There was some doubt when she commenced treatment whether there was not a secondary deposit in the region of the left ovary. The condition on vaginal examination was considered to be inoperable and no incision was made into the abdomen. A pathological examination was made of a scraping and supported the clinical diagnosis.

Three other patients have been treated from ten to five months ago and all had a total hysterectomy

performed. They are so far in the best of health and have increased in weight without evidence of any secondary deposits.

In these cases I consider that a proper method of procedure had been followed and that the aid of both the surgeon and the radiologist had been called in to combat the disease. From what I can gather from the literature, not having had sufficient time as yet to form an opinion on my own work, the outlook for these patients is very much better than before the advent of deep X-ray therapy.

Two more of these uterine cases I consider are worth quoting a little more fully.

In one a laparotomy was performed eight months ago and a large uterine carcinoma was found bound down to the rectum and bladder. No attempt was made at removal and the patient was sent for X-ray treatment in February of this year. In six weeks she was able to perform all her own house work, complained of no pain and all rectal and urinary symptoms disappeared. Previously she was having a large amount of morphine each day, but this became unnecessary. This woman lived in outwardly good health for eight months, happy, able to keep house for her son and generally enjoying life. Then she suddenly got a recurrence high up in the abdomen, practically throughout the whole of the mesentery, and died about six weeks after these symptoms appeared. I consider that deep therapy was justifiable and allowed her eight months of comfortable life which would not have been procurable by any other means known to medicine.

The other case was one of secondary deposits in the right inguinal glands. The patient was aged fifty-four and at the commencement of treatment weighed forty-eight kilograms (seven stone, eight pounds). On palpation one could almost feel the track of the carcinomatous cells from where the uterus previously lay. Today, nine months later, instead of a fungating mass in the right groin, she is to all appearances healthy, well and able to do anything that a normal woman of her age is capable of doing.

The most satisfactory condition of the uterus so far that I have been able to treat by this method, is that of fibrotic menorrhagia. Of this condition I have seen four cases. Three of the patients were treated over eighteen months ago and one during the earlier part of this year. In all there has been a complete cessation of the menses and no evidence of any blood at all from at the latest six weeks after the last treatment. They have improved in weight, nervous stability and in general health.

The definite and rapid return to health, the vanishing of the anæmia and the general improved conditions in these patients have been truly miraculous. I now look forward to this type of patient being sent along. I feel so certain, so confident of doing good that were it not foolish, I should like to say to the patient on discussing the matter of treatment: "You are going to get better." No more delightful feeling can be experienced in our profession than the closely confined thought that you have a patient who something inside you tells you is going to get better from a wretched malady.

Breast.

I find in twenty-four patients that the ages in which cancer of the breast was seen, range from eighteen to seventy-seven years. Generally speaking, those patients who were past the menopause, seemed to have a better outlook than the younger ones. The time that has elapsed since deep X-ray therapy has been introduced is less sufficient for determining whether it has any curative power or not in regard to mammary carcinoma than in regard to any other region of the body treated. More than 50% were recurrences of an inoperable character. If only the supra-clavicular glands were involved and there was no recurrence in the fleshy tissue between the sternum and the axilla, the chance of reducing the size of the recurrent growth was by far more hopeful. Once metastases were found in the lung tissue, I consider that deep therapy gave no relief and no hope of a cure whatsoever.

Of the other 50% operation had been performed in the great majority; anyone who has closely read Handley Sampson's treatise on breast cancer, cannot fail to believe that it is almost criminal for a surgeon not to refer his patients to the radiologist as soon as possible after operation. Of my twenty-four patients eight have died during the period which this paper covers. In my notes on them I find that the surgeon considered at the time of operation that the prognosis in each case was practically hopeless, due to the tremendous involvement of the deep axillary and clavicular glands. In all instances these patients died of metastases in the lung and I think that probably the lung had been infected in each case before X-ray treatment was commenced. Of the inoperable cases (for as yet I do not consider the surgeon should send an operable breast to be treated solely by radiation therapy), I have seen three with a fungating mass that had broken through the skin. The patients themselves had evident cachexia. Two of these after an interval of eight months are, I consider, now operable and one still under treatment I hope will be fit for operation in another three or four months. In this part of the body, just as in other regions, one cannot help feeling that radiation therapy has done better for advanced tumours which have been untouched by the knife. I merely mention this for future thought. Also, I am finding that the condition is more amenable to treatment if the glandular enlargement has not been operated on when the recurrence is seen, than when the infected gland has been excised and the growth has recurred.

To quote one case of inoperable breast cancer treated, I mention that of a woman, aged fifty-six, who had a fungating carcinoma of the right breast of about three years' duration. There were enlarged glands in the axillary and supra-clavicular regions and considerable loss of weight. The fungating growth smelt very badly and there was much discharge therefrom. The outlook clinically appeared hopeless. She commenced treatment nine

months ago. As usual the first sign noticeable was the greater cleanliness of the fungations and gradually the discharge stopped. In three months the growth was certainly not more than half its previous size and the glands in the axilla and neck had decreased to a very great extent. Today she is over six kilograms heavier, although in the interval she had a bad attack of influenzal broncho-pneumonia. If this patient improves as she has been doing, I think that her tumour will be operable very shortly. In such cases as this the question of subsequent X-ray fibrosis hampering the surgeon during subsequent operation cannot be considered. Previously he would not operate on account of the advanced stage of the disease, so that now it is hardly fair for him to complain of the operation having been made somewhat more difficult.

Digestive Tract.

Coming now to cancerous conditions of the digestive tract, we must realize that this is the worst cancerous cell to compete with. Taking the unit skin dose which will give a definite erythema to the epidermis, as 100, the ordinary cancer cell, in order to be completly destroyed, needs 110 to 120 units. The intestinal epithelium needs to undergo a necrosis 130 to 140 unit skin doses. For this reason you can quite understand I hope how hard it is to combat the carcinomatous condition of the alimentary tract. You have here a cell which needs more rays than any other cell in the body. So much for that. I will now tell you what has happened to ten patients whom I have treated. Unfortunately, I have only had one patient with œsophageal cancer. He was sent as a last resource and I candidly told him I did not consider that he had any chance. Still he was keen for family reason to live a little while longer. The treatment did him no good, but he was grateful for anything I attempted to do for him and interested in the manner in which it was done. When death comes, as it must to all of us, I hope I can face it in something like the same manner.

I wish I had had him earlier, for from what one can read of results over on the other side and from what Dr. Clarke had told me about the Mayo Clinic and other institutions in America and England, they have had some of their best results in the treatment of carcinoma of the œsophagus and the rectum.

I had a letter yesterday about a man who had an inoperable growth of the stomach. When he came to me in December of last year, his period of existence appeared to be no more than three months. There was a large palpable tumour in the epigastrium. He again was one of those patients whom it is a pleasure to meet, a well educated man holding a very responsible position and one to whom one could tell everything. He has now, after freedom from all pain and disturbance(digestive and otherwise) at last got ascites. That man has had at least nine months of comfortable life, having returned from his billet and lived that length of time with his wife and family, after feeling that his day's work had been well and truly done. Surely deep therapy was justifiable. No pain has so far been endured.

The next palpable gastric tumour verified by radiography was in a woman aged sixty-eight. She in addition had a fractured hip, having been thrown from a motor car. She was given treatment in March of this year and it is a delight to see her walk into my rooms at regular intervals of three months, at the end of which period I try to make all deep therapy patients report themselves. Her regular medical man says that he can now find no evidence of tumour. I myself have examined her and can feel nothing.

One other case which I think is worth while putting on record is that of a woman, of thirty-six years, who had a ring adenoma of splenic flexure. A partial colectomy was performed and perhaps the surgeon may take all the credit for the result. Perhaps the X-rays helped her more than we can ever know. She is now able to dance, to take her place in a hard set of tennis on Sunday afternoons; generally she is quite a different woman to when I first saw her. She started treatment originally on the superficial set at the beginning of December, 1922. Subsequently she had deep therapy.

Two other patients with gastric carcinoma have since died. They did not improve at all save for the fact that all pains disappeared. Anyhow one feels that they died comfortably.

A patient with inoperable carcinoma of the rectum, with extensive secondary growths throughout the abdomen and with a probably primary focus in the uterus had a laparotomy performed. The effect of X-ray therapy seems to be diminished considerably by operations in these very advanced cases. I do not think for a minute that deep therapy would have cured this woman, but at least she would have been saved a great deal of pain and discomfort had the surgeon left her alone. One other patient with malignant disease of the stomach died suddenly twelve months after treatment. Death was not due his cancerous condition and up till then the patient had been particularly well.

Blood Diseases.

Hodgkin's disease and myelocythæmia must come into this paper because three patients have been treated by deep therapy. Two were suffering from the former and one from the latter. If properly applied X-ray therapy does good in these conditions and deep therapy was only used in the above cases as a last resource. The patients I have had with myelocythæmia have done most excellently under ordinary superficial treatment, except this one. A woman, middle-aged, had a white cell count of 526,000. We brought it down by ordinary X-ray treatment to 75,000. Then she unfortunately got an attack of broncho-pneumonia. Her spleen immediately became enlarged almost to the size of a pregnant uterus. Her blood count immediately went kite high. Deep therapy was applied in an endeavour to reduce the size of the spleen which it did to a certain extent, but she never looked like getting better and finally died six week after the last treatment.

One patient with Hodgkin's disease was operated on and glands removed from the right side of the neck. Ordinary X-ray therapy was applied to the other side. The left side of the neck did excellently. The glands in the right side of the neck slowly grew worse, despite all after attempts by X-rays and the man finally died of a large sloughing condition which I think poisoned his system. I think this is a good case and helps to show that operation in Hodgkin's disease is not the best method of treatment. X-ray can do so much more.

The other man had generalized Hodgkin's disease in the groin, axillary, neck, mediastinal and other glands. He was past help and died of pure cachexia.

Goître.

Twelve patients with goître have so far been treated. It seems extraordinary that the exophthalmic type has done much better than those due to the ordinary toxic infection.

Out of the twelve I consider that brilliant results have been obtained in nine. Of the three patients who have not done well, one had a long standing goître of the parenchymatous variety which had been present for nearly ten years. Another was a woman, aged fifty-five, who was cachetic and very much run down; I am of the opinion that her thyreoid gland was the seat of malignant disease. She died. The third one was in a young woman, aged twenty-six years, also with parencymatous goître, in whom I cannot understand why no beneficial result followed. Hers was the third of the twelve results which I cannot explain.

Of the remainder in one man with much exophthalmos, with extreme nervous symptoms and a large tumour in the neck, I have had a most brilliant success; I wish I could have brought him from the country to show him to you tonight. Instead of being a permanent invalid, this man is now driving his own plough, has lost all symptoms of nervousness and is a hard working, useful citizen. His exophthalmos has receded.

As a matter of fact this patient brought me others and out of these twelve five came from the Downs. Quite apart from deep therapy, this condition must be considered as one belonging to certain districts. Of the twelve patients, ten came from two districts, the Darling Downs and the Atherton Tableland. This rather follows the line of thought that McCarrison has written so much about, regarding the regional incidence of the thyreoid enlargement found in India and Switzerland.

I wish I could show you all these nine patients. I really think that despite all the criticism that is levelled against deep X-ray therapy, even the surgeons would feel that, knowing that X-rays can do no harm, they would be wise in holding back the scalpel.

One case is rather interesting in that for twelve months before the deep therapy plant was installed, I applied ordinary superficial X-rays. Her pulse rate at commencement of treatment was 120, her weight was thirty-five and a half kilograms (five stone eight pounds). She had ten treatments during those twelve months and slowly improved until her pulse came down to 92. After having had so much success in deep therapy with other cases, although this patient was a very frail and aged women, I thought it was justifiable to give her one dose with the bigger plant. She is now, from a report from her medical attendant, very, very comfortable, sleeps the night through (which was an unheard-of thing beforehand) and considering the present pleasant state of her mind and body, although I would like to give her a further dose, I think that much has been achieved.

I really consider that from these experiences the surgeon should not operate on an exophthalmic goître before deep X-ray therapy has at least been given a chance.

Testes.

One unusual case worth placing on record is that of a boy, aged fifteen years, who was a congenital idiot just reaching the age of puberty and beginning to show abnormal sexual signs. At the same time he was intractable and accustomed to fly into paroxysms of rage. After due consideration it was decided to apply deep therapy to his testicles with the idea of sterilization. The question of dosage was an important one, as only twenty unit skin doses are supposed to be necessary to kill the testicular cells, compared with 110 to 120 for carcinoma. One dose was applied and for six months the boy has been extremely tractable and able to play with other children without flying into fits of temper. Lately he has not been so well and I am beginning to consider if sufficient dose was given. In X-ray workers who have become sterile, it has been found that a long holiday away from the X-ray exposure allows the spermatozoa to re-appear, but this only happens in those not intensely influenced by the rays. Further and more prolonged treatment in this case, therefore, appears advisable.

Chronic Pyogenic Infection.

A man, aged sixty-two, had a persistent empyema sinus for over ten months. As a last resource he was brought to me and after consultation with his medical man we decided to try and kill the cause of infection by deep therapy. He had two doses and never looked back. I heard of him during this week; he is, I think, quite as pleased as I am about the result.

Epithelioma of the Face, Neck and Glands.

The large secondary epitheliomata of the glands of the neck taken all round have been a disappointment. Of these there have been seventeen cases. Eight of these, which have been advanced inoperable cases with tumours in the neck varying from half the size of a golf ball to that of a large orange, have absolutely failed to respond to treatment and the patients have steadily gone down hill. In addition in some cases there has been a breaking down of the infected glands which have become almost caseous and then pus with sinuses has formed. In this condition I can find no reference in journals, although I know it happens with other workers, as I saw a similar case which had been treated in Melbourne.

Once this caseation occurs, it appears hopeless to try anything further. A specimen of the fluid from one of these patients was examined by Dr. Duhig and he reported that there was no sign of any structural tissue whatsoever; he likened the specimen to that obtained from a necrotic glioma. The explanation appears to be that the intense radiation breaks down the infected glands and that necrosis takes place so rapidly that the blood and lymphatic streams have not time to carry off the dead tissue. The curious part about the pathological findings is that there is no sign of any inflammatory cells. The glands of the neck which have reacted more beneficially to treatment, are those on which radical operation has been performed or which are small. The small amount of infected tissue does not break down like those just mentioned; some patients irradiated eighteen months ago still show no return of the glandular enlargement.

Epitheliomata of the face react much better than the infected glands. This is only to be expected as cures by "superficial" X-ray therapy of epithelioma of the lip and other superficial areas, have been reported for many years. Still I do not consider that the large fungating epitheliomata of this region, considered inoperable by the surgeon, could be touched by the old X-ray method. I have shown you tonight one man who had a huge epithelioma of the left zygomatic region. He had the old type of X-ray treatment for twelve months after an operation. For a while the growth was certainly held in check, but towards the end of the twelve months the patient became rapidly worse and when I saw him just before the deep therapy was installed, I thought he had only a few weeks to live. This man was one of the first I treated and there is no doubt that he owes his life to deep therapy. The fungating edges of the growth and the hard infiltration extending under the skin slowly disappeared until he reached the stage in which you have seen him. He commenced deep therapy in February, 1923, during which months I gave him four doses. In both May and August of that year he had one more dose. Since then he had had no treatment.

Another patient, a woman, aged fifty-five years, originally had an epithelioma of the upper lip, which afterwards involved both sides of the nose, externally and internally, and began treatment as a last resource in February last year. Five exposures were applied during the next three months. Three months later the cancerous tissue had become so limited that hers was considered to be a fit case for diathermy; now, although there is some retraction of the right nostril and a puckering of the upper lip, there is no clinical evidence of disease. Practically all the facial epitheliomata in my opinion have benefited considerably. In the majority of the patients, on present indications, I do not expect any recurrence.

Epithelioma of the Tonsil, Soft Palate and Tongue.

In all cases of epithelioma of the tonsil, soft palate and tongue, diathermy has been used as a preliminary form of treatment. Again results have to a great extent depended on the stage at which the patients were first seen. The large malignant tumour of the tonsil with secondary growths in the cervical glands naturally do not yield such good results as the small carcinomatous patches and no secondary deposits. During the period under review there have been eighteen patients with these growths. Four after twelve months are apparently in excellent health. Of these a man had a recurrence after diathermy. A second operation was performed and this time, as the deep therapy machine had been installed, he had two doses of X-rays as well. It is now twenty-months since his last treatment. Another was an old woman of seventy-eight years who twelve months afterwards succumbed to pneumonia, having shown no recurrence up till then; she had led a comfortable, happy life.

One case of epithelioma of the chin which resisted treatment by diathermy, has done well under deep therapy, whilst a very chronic, long-standing growth of similar nature on the forearm did not react well with deep therapy, but has apparently vanished after diathermy. One old man of seventy with an advanced malignant growth of the tonsil and glands in the neck, treated by deep therapy alone six months ago, has done remarkably well. The next and very similar case which was treated showed no good result whatever. This sort of happening makes it all so very hard to know to what case to apply the rays. Some of the worst cases do better than the less advanced ones.

Of the remaining patients two have since died and one now has contracted a large abscess in the neck and his outlook does not appear hopeful. I have not heard from one patient.

Parotid Tumour.

Five patients have been seen, three men and two women, with parotid tumours. Three of the growths have been pathologically examined. All five patients have done remarkably well. The first was seen in May of last year (nineteen months) and I have shown the patient here tonight. So far the treatment appears to be a brilliant success. The remainder have all done as well, but the period since treatment has been shorter.

Sarcomata.

Seventeen patients with sarcoma have been treated, including sarcoma of the cranial and spinal bones, of the humerus, of the muscles of the thigh and arm, of the breast, of the post-nasal fossa, of the mediastinal and cervical glands. Of these eight have not done well. Two had secondary growths in various parts of the body and were considered hopeless at the time, but X-rays were applied in order to relieve pain. They did. Two mediastinal growths both did excellently to commence with and the general improvement was remarkalbe for the time being. Both patients belonged to the country and in my opinion, as they were not kept under constant observation, sufficient dosage was not applied. They both died.

One other man had lympho-sarcoma of the neck and groins; he returned to the country and these

glands disappeared. Six months later a sciatic pain appeared, but he did not return for some little while. On X-ray examination it was found he had a secondary deposit in the lumbar spine, which had eaten into the bodies of two of the vertebræ. His outlook appeared hopeless, but he was in such severe pain that deep therapy was applied; he died, certainly in a much more comfortable manner than he otherwise would have done.

One case of sarcomaa of the arm in a youth, aged eighteen years, had been three times surgically removed. This tumour has not responded well, although another extensive and inoperable tumour involving the muscles of the thigh, was reduced by twenty centimetres in circumference after the first course of treatment. This patient is still doing well ten months later.

One woman, aged forty-three years, with a small spindle-cell infection of the upper end of the humerus I have shown to the members of this Branch before. I have brought tonight her latest films for anybody who would care to see them. She is still excellently well and were it not for the fact that she has an ankylosed left shoulder joint, I think she would not know that she had had such a disease. The time since treatment was first started is seventeen months.

There have been two cases of sarcomata arising in the ribs, one pathologically examined, the other diagnosed by several medical men as being an osseous sarcomatous growth. The patients have both so far done very well indeed during a period extending up to nine months.

Another good case has been a boy, aged fifteen years, operated on by Dr. Robertson at the Mater Misericordiæ Hospital. A sarcoma was found deep below the zygomatic arch, practically filling the whole of the temporal fossa. He is still blind in the eye on that side, but when last seen a few weeks ago, nine months after treatment, there was no apparent evidence of disease. Two other cases have been diagnosed as sarcoma of the neck. Both patients have only finished treatment a few months ago. They are so far very well. One was operated on by Sir Alexander MacCormick and he gave a very grave prognosis on account of the depth to which the growth extended. The last patient in this series is a child, aged five years, with a growth on the left tonsil. There was some doubt whether this was sarcomatous or tuberculous. The parents wished to take him to Sydney for further opinion, but in order to be on the safe side he was given a dose of deep therapy before leaving. The result was that when he arrived in Sydney about ten days later, the tonsil enlargement had practically disappeared.

One case of post-nasal sarcoma, in a woman, aged twenty-three years, did very well to commence with; in fact she felt in such good general health that when she was due to return in two to three months' time, she did not do so and it was not until some time later that she returned when the growth had again got hold of her mucous membrane. She returned somewhat later for further treatment, but again went back and lately I have given her X-ray doses for the relief of pain. I think she would have done very much better if she had returned when she was advised to do so.

Pre-Operative Treatment.

In a paper such as this something must be said regarding the value of pre-operative treatment. I have given a few doses of pre-operative therapy, not sufficient as yet to warrant me in giving any opinion about it.

In all English and American journals and at the last Melbourne Congress this idea has been greatly favoured. If the operation is performed about a fortnight after an X-ray dose, there is not sufficient fibrous tissue to hinder the surgeon. I really think that this should be done.

Conclusions.

I have attempted to show you the successes and failures in the period during which I have been using deep X-ray therapy. There is much matter that I could have culled from various books and journals, but I have preferred to tell you only my own experiences.

I think by this time one should be able to form some opinion as to whether it is a genuine advance in medical treatment or whether it is a fraud, such as the electronic reaction of Abrams.

In certain classes of cases there is no doubt that it has been of tremendous benefit. It has certainly restored to health for periods extending up to a year and nine months many people who would by now have suffered a lingering and painful death. These people have been able to live and enjoy life as though they had not the cell of cancer implanted in their tissues. In other cases there has been complete relief from all pain, with the resultant mental happiness. In no type of case do I consider it has done any harm, increased pain or hastened death. Even those patients in whose cervical glands complete necrosis of cancerous cells had set in, were more comfortable than previously.

Diseases of the thyreoid gland you have seen have done exceptionally well.

For all types of sarcomata it has undoubtedly shown that with or without surgery it is of tremendous and hitherto unknown value. In fibrotic menorrhagia it seems to be the treatment of choice. I have tried to show you that in a large percentage of inoperable malignant neoplasm of the uterus, it does good. In cancerous conditions of the digestive tract relief and occasionally startling relief has been obtained.

In the tremendously advanced cases there is no doubt that, although from the beginning we did not expect to cure them, the relief from pain has been evident.

So we go on finding that some conditions do better than others, but realize that each patient ought to have an opportunity of receiving treatment, for we know not what surprising result may eventuate.

It seems wrong, I know, that we cannot say that this patient will do well or this patient will not, but in other forms of treatment much the same thing

occurs. Each human body reacts to our various methods of attempted cure in a totally different manner to any other human body. So it happens in X-ray treatment and until we arrive at the very cause of life, it will ever be the same.

I am wrapped up in this work and feel that I am not using a form of treatment that could be called anything but useful, to say the least—a useful adjunct to the other methods of dealing with diseases. We are as yet fossickers only scratching the surface, storing away any precious sign that may help us on to reach the goal for which we are all as medical men placed on this earth, namely to allay suffering and combat disease. If we add one little drop to the immense sea of knowledge, I do not consider that in after life we shall be confined to utter darkness. Judge this treatment rationally.

I have placed before you not only successes, but a number of failures. And in so doing I want you to realize that all these patients have, except those in whom post-operative treatment has been called for, been beyond the reach of any other medical or surgical aid.

I do not consider that the time has yet come when we should try and steal the cases from the surgeon, but as in all other branches of our profession we should link arms round those who need our help and assist them along the highway of life between us.

Reports of Cases.

SPINDLE-CELLED SARCOMA OF THE BROAD LIGAMENT.[1]

By R. F. MAY, M.B., B.S. (Melbourne),
Resident Medical Officer,
Perth Hospital.

THE following case is reported on account of the large size of the tumour, the relatively small amount of disturbance of health occasioned by its presence and the unusual nature of a growth of the broad ligament in a woman past the menopause. I am indebted to Mr. F. A. Hadley for permission to publish the record.

M.M., aged fifty-four years, married, a native of Perth, was admitted to the Perth Hospital on September 16, 1924, on account of a swelling of the abdomen which had been noticed for a period of about six months. The patient stated that she had been perfectly well until March, 1924, except for slight indigestion in the form of a sense of fullness after meals. She then felt slight "morning sickness" similar to that of pregnancy. She had not experienced any discomfort during the remainder of the day. She had had some slight pain in the groins after exercise. She had always been stout, but the abdomen had become much larger since the onset of her illness. At the time of admission she found it very difficult to get about on account of the size and weight of the abdomen. She said that her skin was becoming a little darker.

She had had eight children. The family history contained no ætiological indications. Her previous health had been good.

There were no symptoms of disturbance of the digestive system. She stated that she had not had any signs of jaundice. The urinary system was normal, save for a small amount of albumin in the urine detected at the time of admission. This disappeared within a few days. The patient had not noticed any swelling of her feet. She had been a little short-winded shortly before admission, but had not lost weight. She slept well and her appetite was satisfactory. The menopause had taken place in 1921.

The patient was a stout woman. She lay comfortably on her side. Her colour was good and she was not dyspnœic. The skin of the exposed parts was a little darker than that of the rest of her body. Otherwise the skin appeared to be natural. The conjunctivæ were not jaundiced. There was slight œdema of both legs.

The abdomen was very protuberant. A large, hard, spherical tumour was found filling the abdominal cavity; the abdominal walls were tightly stretched by it. It extended upwards under the costal margin. No nodules were felt in the umbilical region. No enlarged lymphatic glands were palpable either in the groin or in the axilla. A smaller mass, apparently a portion of the larger tumour or a boss of this tumour, was felt in the region of the spleen. There was no fluid thrill. A friction rub was felt over the tumour during palpation. The flanks were resonant. Traube's space was also resonant. The percussion note over the tumour was flat and dull.

On September 22, 1924, the patient was anæsthetized. Mr. F. A. Hadley made an incision in the middle line over the prominence of the tumour. The abdominal parietes were very thin. The surface of a large, glistening tumour was seen. A needle was passed into the tumour, but no fluid was obtained. Free fluid escaped from the peritoneal cavity during the manipulataion of the mass. There were many peritoneal adhesions to be broken down. It was found to be very difficult to free the mass, owing to large bands resembling pedicles connecting the bladder, the uterus, the omentum and the intestine to the tumour. These pedicles were clamped and severed. Portions of the tumour were then torn off, to enable Mr. Hadley to explore the remaining mass to better advantage. There were two enormous bosses from the main mass in the splenic region and in the right renal region. The remainder of the mass filled the pelvis and the rest of the peritoneal cavity.

Both ovaries were present and appeared to be normal. It was thought that the origin of the tumour was in the right broad ligament.

As the patient's condition was very critical, a rapid ligation of all the stumps of the pedicles and adhesions was performed. The abdomen was then found to be remarkably clear. The wound was closed in the usual manner without drainage.

After the operation the patient's condition gave rise to much anxiety. Her pulse rate was 112. The pulse was almost imperceptible in volume. During the following twenty-four hours her temperature varied between 38.3° C. and 39° C. (101° F. and 102.2° F.), while the pulse rate varied between 112 and 136. She then improved and this improvement continued steadily. Recovery followed.

The tumour after removal weighed 11.3 kilograms (twenty-five pounds). It occupied the space of two ordinary hand basins. On microscopical examination it was found to be a spindle-celled sarcoma.

[1] Read at a meeting of the Western Australian Branch of the British Medical Association on September 17, 1924.

Reviews.

PRACTICAL RADIOLOGY.

FROM quite a small handbook in its second edition in 1917 "A Manual of Practical X-Ray Work" by Arthur and Muir has grown in its third edition in 1924 into a large volume.[1] It is now compiled by Dr. John Muir alone, the collaboration not being continued in the present volume.

About one-half of the book is taken up with a discussion on the technical side of the subject dealing with physics, apparatus and technique. It covers the ground

[1] "A Manual of Practical X-Ray Work," by John Muir, B.Sc., M.B., Ch.B. (Pub. Health), in collaboration with Sir Archibald Reid, K.B.E., M.R.C.S., L.R.C.P., D.M.R.E. (Camb.), and F. J. Harlow, B.Sc., F. Inst. P., A.R.C.Sc.; 1924. London: William Heinemann (Medical Books), Limited. Royal 8vo., pp. 534, with numerous illustrations. Price: 31s. 6d. net.

well and the method of arrangement, the letterpress and the illustrations are to be commended. It is difficult to detect a defect in this portion of the work, but we are rather surprised that no mention is made of a modern tilting table with its wonderful facility for the handling of patients who are very ill and for carrying out special technical methods such as the displacement of the appendix from the pelvis in connexion with ptosis of the caecum.

It contains the X-ray and Radium Protection Committee's preliminary report, dealing with the protective measures to be adopted by X-ray workers, if they wish to carry on their work without interruption and without deterioration of their health. A copy of this report should be in every X-ray laboratory.

The use of intensifying screens is not nearly as common in England as in America and the special technique devised for the universial use of this form of radiography is not mentioned.

The half of the work devoted to diagnosis deserves the very highest commendation. While not attempting to be exhaustive, there are few if any important omissions. For instance, in regard to gall stones a proper emphasis is laid upon the bismuth meal examination, as opposed to direct radiography.

The great fault which is found in works on radiological diagnosis, is very evident here; it is the faulty reproductions of skiagrams. It is evident that the fine detail that is necessary in order that skiagrams should have their utmost diagnostic value, is extremely difficult to reproduce. Unless the block makers are exceptionally well trained and the machining is done with great skill, direct photography must be employed. Some of the reproductions are of less value than diagrams and would have been better omitted entirely, as they do not exhibit the pathological details they are intended to illustrate.

It has wisely been decided to omit any reference to radiotherapy, for the rapid advance in this branch of radiology would necessitate for its adequate discussion an increase of over 50% in the size of an already bulky manual.

As an introduction to the study of radiology and as a handbook for practising physicians and surgeons the work will have its greatest vogue; it serves these functions very well.

Analytical Department.

"LACTOGEN."

IN September, 1921, THE MEDICAL JOURNAL OF AUSTRALIA instituted a thorough inspection of the factory of the Nestlé and Anglo-Swiss Condensed Milk Company, Limited, at which "Lactogen" is manufactured, and carried out exhaustive analyses of this preparation. A report was published in the journal of July 15, 1922. At that time attention was called to some defects in the process and in the plant, although the finished product was found to be satisfactory and its bacterial content low. It was announced shortly after the appearance of the report that the defects had been remedied. We have caused a further investigation to be carried out and as will be seen from the following, the process and the plant can now be regarded as excellent.

Delivery of Milk and Testing.

Fresh milk is collected by the Company in its own vehicles which are constructed to protect the milk from sun and dust. The cans are manufactured from one piece of metal and are conical in shape. Upon arrival at the factory the milk is unloaded on the weighing platform. If the odour and taste are good, it is passed through a strainer into the automatic weighing scales. From this place two samples are taken; one is used for the determination of the butter fat content and the other for the purpose of ascertaining the acidity, fermentation, reductase content, specific gravity and dirt in suspension. The milk then travels down a pipe into a receiving vat. Prior to entering this vat a drip sample is taken to ascertain the composition of the batch. From the receiving vat the milk is pumped in pipes to the top of the cooler. The temperature is regulated by means of brine which is kept at —4.4° C. (20° F.). Special attention is paid in the cooling room to the condition of the cooler and its surroundings. From the cooler the milk is brought in pipes to the vats, as described in the first report. The cooler is washed with water, sterilized with superheated steam as soon as the milk passes out and immediately before the next quantity is delivered it is again flushed with hot water and sterilized with steam.

Standardization.

The milk is standardized in the vats. From the analyses of the samples taken from the weighing scale, the adjustment of the fats and solids not fats is carried out. Check samples are then taken from the vats so that the composition of the milk can be kept constant. Only milk of the required standard is allowed to pass into the drying room.

The Drying Process.

The standardized milk is received into other vats and is kept in motion by suitable agitators. Lactose and sodium bicarbonate are then added, according to the figures supplied from the laboratory. Before the sugar of milk is added, it is boiled in water until completely dissolved by means of steam jets. The milk sugar solution is strained into a can placed on scales on which the required quantity is weighed. It is then filtered through a cotton pad filter into the milk. The bicarbonate is mixed in a special container and strained into another vessel to insure complete solution. The quantity of solution is weighed and filtered into the milk. During this part of the process the milk is kept agitated. The addition of the lactose and bicarbonate is completed some time before the milk is further treated, in order that the former may become intimately mixed with the latter.

From the vats the milk passes into the homogenizer. In this machine pressure is exerted on the milk and the globules of fats are broken up. From the homogenizer the milk passes over metal rollers heated with steam; the rollers pick up a thin film of milk which is removed by means of a knife. The film of milk is in contact with the rollers for approximately two-thirds of a revolution; the time of contact is about four seconds. This has the effect of driving off the moisture and leaving the solids of the milk in the form of a film, like tissue paper. Special shields are placed on the machines so that a draught of air cools the film as it leaves the roller. The film is then removed, broken down by a revolving brush and packed into tins which hold approximately twenty-two and a half kilograms (fifty pounds) of the dry product. In the process of breaking down, a small stream is allowed to escape into a vessel. From this a sample is secured. Samples are also taken from each roller at stated intervals.

The Laboratory.

The laboratory is a large and well ventilated room. The analyses are conducted by trained men and girls under the supervision of two chemists. A control is kept of the fresh milk and of the finished dry product. Only milk is accepted for manufacture which conforms to the rigid standard prescribed. Dirty milk is eliminated. Special tests have been devised to insure that only a first class powder is issued for sale. Every batch is numbered and coded and a system is adopted whereby the history of each batch can be followed.

Additional Precautions.

Before the "Lactogen" is packed in the smaller containers, samples are taken from each large tin and a further examination is made.

All the walls of the factory are lime washed once in each fortnight and all the floors are disinfected daily. Special precautions are taken to preclude the inclusion of dust into the milk or milk powder and any other contamination.

Conclusion.

It thus appears that "Lactogen" is a dried milk preparation of a high degree of purity made from rich fresh milk. The process of manufacture is good and great care is exercised to insure that the product is clean, wholesome and uniform in composition.

The Medical Journal of Australia

SATURDAY, JANUARY 3, 1925.

A Retrospect.

TWELVE months have slipped by since last we took count of the position in which the medical profession finds itself. This annual examination of our assets and liabilities enables us to ascertain whether our expenditure of energy and time is returning a reasonable measure of knowledge and is yielding to the community a satisfactory reduction of disease and suffering. It is by no means easy to assess with accuracy the real value of work done or of schemes evolved until the work has been checked over and over again in the course of time and the schemes have been brought into operation on a large scale. A year is a very short time for this purpose, but it is often long enough to enable us to detect the defects in new work and to discover investigations that mean progress.

The most important event to the medical profession in Australia, perhaps in the whole world, of the year 1924 was the untimely death of John Irvine Hunter, the anatomist, embryologist, physiologist, anthropologist, who had attained fame and eminence at an age when men are usually learning how to observe. The wound caused by his death is still fresh; it will be long before it is healed, for such men are very rare and his colleagues had thought that he had a whole life before him to work for the benefit of humanity.

The Australasian Medical Publishing Company, Limited.

Last year we announced that the Directors of the Australasian Medical Publishing Company, Limited, had determined to extend their printing arrangements and had applied to the members of the several Branches of the British Medical Association in Australia to support the scheme by taking up debentures. The issue was over-subscribed by the date fixed. In due course the debentures were allotted in each State. A suitable site was secured in close proximity to the University of Sydney, at the corner of Seamer Street and Arundel Street. The foundation stone was laid by Dr. W. N. Robertson, C.B.E., Chairman of Directors, on July 16, 1924, and the three storey building is now approaching completion. In this building the Company will install two modern flat-bed presses, three linotype machines and the accessory machinery and other equipment necessary for high class printing. The offices of THE MEDICAL JOURNAL OF AUSTRALIA will be transferred to this building early in the year. The present staff of expert printers will be augmented, so that the workers will be able to specialize in the printing of scientific literature. It is the objective of the Company to follow this specialty and to aim at the highest standard of accuracy in typography and printing of medical, biological, mathematical and other scientific work. It is obtaining the support of several of the learned societies and institutions in New South Wales and is looking to the sister States for similar recognition in the near future. A full description of the building and its contents will be published in this journal within a few weeks. A certain amount of job printing will be undertaken for individual members of the medical profession.

The Medical Profession in Australia.

The medical profession in the Commonwealth continues to grow in size and its importance to the nation is becoming increasingly evident. During the past five years the numerical strength of the profession has been greatly augmented and the increase has been greatest during the past two years. The efficiency of its members is admittedly high. In the old country Australian graduates hold many important positions, while the leaders of the profession in Australia have earned an enviably prominent place in the medical world. Repeated success is stimulating an increasingly large number of workers to still better effort.

The British Medical Association.

The Federal Committee of the British Medical Association in Australia and the six Branches of the Association are now playing a very important part in the political life of the community. Formerly the greater part of the activity of these bodies was

directed toward the improvement of the status of the medical practitioner and toward the regulation of his relations to the public. While this function of the British Medical Association is both essential and beneficial and must be continued, its direct collaboration with the authorities in instituting reforms for the preservation of the public is incomparably more important.

During the year 1924 the British Medical Association in Australia has achieved a great deal. In the last days of March the Lords of the Judicial Committee of the Privy Council dismissed the appeal by Dr. G. S. Thompson against the verdict of the Full Court in favour of the New South Wales Branch of the British Medical Association. The importance of the verdict not only to the New South Wales Branch, but also to every society, association and club, is evident. The precedent has now been established that a society, association or other organization with properly constituted rules and regulations can expel a member for breaches of its rules and regulations, provided that the inquiry into the charge is conducted in a constitutional and legal manner and that the member is found to have done something that justifies the extreme expedient of expulsion. The verdict was acclaimed with much satisfaction in all parts of the British Medical Association.

The Royal Commission on National Health Insurance approached the Federal Committee with a request to render it assistance. Not only were members of the Federal Committee and of the Branches asked to give evidence before the Commission, but the Committee was invited to devise a workable scheme of national health insurance that would be acceptable to the medical profession and applicable to Australian conditions. This is now under consideration by the Branches and will form the subject of renewed discussion at the next meeting of the Federal Committee. The medical profession has declared with no uncertain voice that it is opposed to every known system of compulsory health insurance for Australia and that it is not prepared to work under such a system. The Commission has not yet issued its report. Proof has not been adduced in support of the contention that there is a real need for any compulsory scheme of insurance against the cost of medical attendance during illness and after injury. If any system is devised and introduced, it should make provision for those who, on account of being unemployed or unemployable, are incapable of contributing to any insurance and for whom no persons or firms can be made responsible. It is gratifying that the medical profession has been approached for guidance in formulating the conditions under which the improvident can be made to have regard for the morrow and the unfortunate can be protected against themselves and their misfortunes. It would be little short of a disaster should the medical profession neglect this opportunity of leading the way.

The Federal Government has recently decided to institute an inquiry by Royal Commission into the many questions related to the preservation of the health of the community. In this instance the medical profession has been asked to do more than lend its aid. It has been asked to conduct the inquiry. The Government has appointed Sir George Syme, Dr. F. S. Hone and Dr. Jane S. Greig and the nominee of the Federal Committee, Dr. R. H. Todd, members of the Commission. Only one lay member has been chosen. Sir George Syme is to be chairman of the Commission. It is evident that the British Medical Association as the organized representative body of the medical profession in the Commonwealth, has gained the complete confidence of the Federal authorities. The Royal Commission has a gigantic task before it and we can rest assured that no four medical practitioners could be more competent to accomplish it than the quartet named.

While the Federal Committee and the Branches of the Association are expending energy and resource in connexion with the problems of national health insurance and the prevention of disease, they are finalizing the admirable report by Dr. F. S. Hone and Dr. H. S. Newland on the coordination of the medical profession with the Department of Health of the Commonwealth. The practical outcome of this report should be a manifest improvement in the health of the community and a substantial gain in the efficiency of the measures adopted for the prevention of disease. This work is supplementary to that of the Royal Commissions and does not involve overlapping.

The Victorian Branch has determined to rebuild its house. Proposals for the purchase of a new site and the erection of a large building to accommodate the Branch and to provide rooms for its members were considered with great care. Many difficulties presented themselves and it was ultimately decided to pull down the old Medical Society Hall in Albert Street, East Melbourne, and to build a larger and better house on the same site. As soon as the building is completed, the magnificent war memorial which now stands in the Anatomy Department of the University of Melbourne, will find its permanent place. The foundation stone was laid on November 26, 1924.

On the retirement of Sir George Syme from active practice as a surgeon the Victorian Branch resolved to commemorate his valuable services to the medical profession, to the British Medical Association and to the community by instituting a "Syme Foundation," by having his portrait painted by an eminent artist and by presenting Lady Syme with a copy of the portrait. We have regretted the fact that the large demands on the limited amount of space in this journal has compelled us to postpone the publication of an account of the ceremony at which the portrait was dedicated to the Branch and the copy presented to Lady Syme.

The Council of the Victorian Branch has appointed an historical committee under the chairmanship of Dr. Felix Meyer. The Council is inviting members to forward information concerning medical pioneers to Dr. Meyer.

The Australasian Medical Congress (British Medical Association).

Last year we announced that arrangements had been made for the publication of the Transactions of the first session of the Australasian Medical Congress (British Medical Association), Melbourne, 1923, in a series of supplements to THE MEDICAL JOURNAL OF AUSTRALIA, commencing in the early part of the year. The first supplement appeared on February 16 and the last on July 26, 1924. This means that the Transactions began to appear within three months of the holding of the Congress. The publication was fraught with many difficulties, partly because the printing arrangements of the Australasian Medical Publishing Company, Limited, were insufficient to enable it to undertake the work. It therefore became necessary to have the work carried out elsewhere.

The invitation of the New Zealand Branch of the British Medical Association to hold the second session of the Australasian Medical Congress (British Medical Association) at Dunedin in 1926, has been accepted by the Federal Committee.

Universities.

The year that has just passed, has witnessed no fundamental changes in the curriculum or in the methods of teaching in any of the three medical schools of the Universities. In the University of Sydney the most important events have been the establishment of a chair of obstetrics and the institution of a cancer research committee. Professor A. E. Mills, the Dean of the Faculty of Medicine, has been re-appointed for a further term as Professor of Medicine and Dean and we offer him our congratulations on the high honour. In the near future the new Professor of Obstetrics will be appointed and a successor to the late Professor John I. Hunter will have to be found. In the meantime Dr. F. A. Maguire, D.S.O., is again filling the position of Acting Professor of Anatomy.

In the University of Melbourne the chair of pathology has been given to Dr. Peter MacCallum, who will be accorded a warm welcome on his arrival in the Commonwealth.

No fresh professorial appointments have been made in Adelaide.

The activity of the Melbourne Permanent Committee for Post-Graduate Work has been maintained throughout the year. In July a special series of admirable lectures on renal diseases was held. The lecturers were Dr. C. H. Kellaway, Dr. W. W. S. Johnston, Dr. Robert Fowler and Dr. A. V. M. Anderson. There was a full attendance.

The annual courses in Melbourne and Sydney are now regarded as important events in the medical year. Refresher courses are becoming increasingly essential for modern practitioners.

The Melbourne Post-Graduate Committee has been enabled, through the generosity of an anonymous donor, to offer a prize of one hundred and fifty guineas for the best essay on the causes and prevention of maternal mortality and morbidity.

Abstracts from Current Medical Literature.

PÆDIATRICS.

Dilatation of the Aorta.

J. H. SELDON (*British Journal of Diseases of Children*, October-December, 1923) describes an instance in which dilatation of the aorta in a boy, aged ten years, was produced by the high blood-pressure resulting from chronic interstitial nephritis. The patient was admitted to hospital in August, 1922, owing to an attack of hæmaturia. The family history was bad, he being the second of five children of whom three were dead. Both parents were healthy. Neither reacted to the Wasserman test and no syphilitic stigmata were discovered. The patient was healthy until six months old when he had scarlet fever followed by an "abscess in the throat." From this illness he apparently made a good recovery. At six years of age he had measles followed by broncho-pneumonia and whooping cough. He had not been well since. At seven years of age he had a severe attack of pain in the side and a renal calculus was suspected. Some months later he began to have "turns of headache and sickness." During the last few months he had had several attacks of hæmaturia. On admission he was thin and pale. The superficial veins over the upper part of the chest were dilated on both sides. Both external jugular veins were very prominent. The veins of the left arm and forearm were dilated and prominent in contrast to those of the right limb. Signs of dilatation of the arch of the aorta were evident. There was an area of dulness in the two upper left intercostal spaces, extending across the manubrium to 2.5 centimetres beyond the right border of the sternum in the second interspace. A heavy diastolic shock was palpable in the second right space and there were signs of venous pressure. The radial artery was hard and thickened, but not tortuous. The blood pressure was 210 to 155 millimetres of mercury. Examination of the eyes revealed the presence of extensive neuro-retinitis. The reaction of the urine on admission was neutral and its specific gravity was 1012. It contained blood and albumin. Microscopical examination revealed blood cells only, no casts were seen. The Wassermann test was done twice and no reaction was obtained on either occasion. A skiagram of the chest was taken and an obvious fusiform enlargement of the arch of the aorta was found. In the middle of September the aortic sound was noted to be losing its bell-like note. On September 22 a diastolic bruit over the aortic valves appeared. Death which occurred on October 4, 1922, was due to uræmia. Autopsy disclosed a heart weighing 340 grammes (twelve ounces) with great hypertrophy of the left ventricle and to a less extent of the right ventricle. The valves appeared normal to the naked eye. The aorta was not enlarged and the shape of the aortic arch was quite normal. On histological examination of the aorta very little abnormality was found. There was a slight degree of medial hypertrophy. The kidneys were affected by chronic nephritis of an advanced type. In discussing the discrepancy between the clinical and *post mortem* state of the aorta, the author concludes that there is not sufficient explanation of the dilatation to be found in the aorta itself. He regards the dilatation present during life as a direct mechanical consequence of the increase in the blood pressure due to the chronic interstitial nephritis. The slight hypertrophy of the *tunica media* found *post mortem* was presumably an attempt on the part of the muscle to assist the elastic tissue in its task of restoring the aorta to a normal calibre. It was the contraction of this muscle in *rigor mortis* that made the aorta appear of normal size.

Pneumonia in Children Due to Foreign Bodies.

HANS WIMBERGER (*Wiener Medizinische Wochenschrift*, May 24, 1924) states that, if sudden death does not ensue, the inspiration of foreign bodies may set up urgent symptoms such as dyspnœa, prolonged coughing, cyanosis and pain. The coughing and straining are kept up until the foreign body is either expelled through the glottis or becomes fixed, generally in the eparterial bronchus. The further occurrence of absorption, chronic bronchitis, broncho-pneumonia, bronchiectasis or abscess formation depend on the character of the foreign body. The diagnosis may be very obscure owing to the impossibility of obtaining a reliable history in many instances. Radiological examination of the chest is essential. Many patients have been treated as tuberculous until a radiogram has been taken.

Diabetes in Children.

G. L. BOYD (*Archives of Pediatrics*, May, 1924) discusses diabetes in children. With regard to ætiology, heredity has been regarded as the most important factor. In the author's series of thirty-two patients infection was responsible for the onset in 56.2% and heredity for only 0.09%. The tonsils were the foci of infection in 61% of the instances caused by infection. In most the removal of infection was followed by a slight increase in the patient's tolerance to carbo-hydrate. The lack of gross change in the pancreas frequently noted in adult diabetes is even more common in children. Hydropic degeneration was the only pathological change seen in the pancreas in all the author's fatal cases. There was little evidence of inflammatory or degenerative change in other portions of the pancreas, but the small number of islands present was striking. Careful examination revealed island cells in various stages of degeneration. Cultures of the pancreas in four of these instances yielded no result. The liver was enlarged in every patient. Microscopical examination revealed extensive vacuolation of the liver cells, the exact nature of which has not been determined. The kidneys usually manifest some change most often of a degenerative type in the tubules. Parenchymatous nephritis is a frequently associated condition. In this series the fasting blood sugar varied from 0.119% to 0.600%. The threshold at which glucose is excreted by the kidney, has wide variations (from 0.1% to 0.285% in this series). This wide variation indicates the inadequacy of urine examinations alone from either the diagnostic or therapeutic standpoint. Alimentary glycosuria is not infrequently seen in children and is only of importance from the diagnostic point of view. The diets used by the author consisted of carbo-hydrate and protein within the patient's tolerance. They were usually in equal amounts or the protein slightly in excess. As much fat was given as possible without the production of acidosis, that is 1.5 grammes ketogenic to 1 gramme anti-ketogenic material. "Insulin" was used in twenty patients. The initial dose given was five units twice a day and it was increased as necessity arose. When the blood sugar became normal, the diet was increased gradually until the patient was taking 2,000 to 3,000 calories. The dose required on this high diet varied from fifteen to seventy units a day.

Hæmoglobin Formation in Infants.

L. W. HILL (*Boston Medical and Surgical Journal*, August 21, 1924) discusses the relation of pigment and iron in infants' diet to hæmoglobin formation. Hæmoglobin consists of two parts, an iron containing pigment, hæmatin and a protein, globin. Hæmatin is closely related chemically and biologically to chlorophyll and to the group of pigments which occur so commonly in plant life, the carotinoids and xanthophylls. These substances are contained in green leaves, such as spinach, and in fruits. Certain foods of animal origin, notably egg yolk and the fat of milk also contain these pigments, derived from the vegetable kingdom. Hæmoglobin cannot be made from iron and protein alone. The pigment is of equal importance. It is probable that when hæmoglobin manufacture is insufficient in the infant, this is due more often to lack of iron than to lack of pigment or protein. Human milk contains about 0.55 milligrammes of iron per litre, cow's milk only about 0.17. This amount of iron is insufficient to supply the needs of the rapidly growing infant. The young of mammals are born with a reserve supply of iron in the liver. This is deposited during the last portion of intra-uterine life. Bunge found that the longer the suckling period is for any species of mammal, the larger the amount of iron deposited in the liver. The human infant is born with a reserve supply of iron in its liver which is intended to last until he can begin to take food which contains

more iron than milk does. It is probable that this iron reserve is used up more quickly in the bottle fed than in the breast fed infant. Infants fed on an exclusively milk diet after the eighth or ninth month not infrequently become affected by a rather severe anæmia, characterized especially by a low hæmglobin value. This anæmia may occur as early as the third month in premature infants. Hence it is desirable as soon as the iron deposit in the liver is exhausted, to add iron-containing food to the diet. Clinically, it is known that the normal full time infant does well and does not become anæmic on an exclusively milk diet for eight or nine months at any rate. The foods which may be added at this period are green vegetables, egg yolk, apple sauce, prune sauce, beef juice. Of these egg yolk, spinach and prune sauce are richest in iron. In the case of premature babies extra iron must be supplied earlier. If inorganic iron is used, the author recommends the saccharated oxide of iron. This may be given to premature infants after the first month. It is best given in powder form, a pinch or two three times a day mixed with a little milk, water or orange juice.

ORTHOPÆDIC SURGERY.

Mistakes in the Treatment of Fractures.

A. EISELBERG (*Wiener Medizinische Wochenschrift*, June, 1924) maintains that the main cause of failure in the treatment of fractures is faulty alignment of the fragments. This may be due to general causes as cachexia from malaria, syphilis, sepsis or severe hæmorrhage. Local conditions as muscle between the ends of bone, necrosis following infections or loss of bone may cause limitation of callus formation. The older methods of setting a fracture in plaster usually meant that proper reduction had first been performed. At the present time this is frequently left to the extension apparatus and the results are not always good. A correct knowledge of muscular action is essential. Radiological examination is most important, whilst anæsthesia is useful when the fracture is being reduced. Certain fractures do not permit of primary reposition and late results of the usual treatment are not good. Examples of these are fractures of the vertebræ, small intra-articular fractures and splintered fractures near joints which can be easily reduced, but as easily recur. Fractures of the olecranon and patella come into this group. In regard to treatment they lie on the boundary between conservative and operative treatment. The author utters a warning against early passive movement in the after treatment.

Recurrent Dislocation of the Shoulder.

H. FINSTERER (*Wiener Medizinische Wochenschrift*, June, 1924) states that frequently the original lesion in recurrent dislocation of the shoulder was a traumatic dislocation. The tear in the capsule especially on the medial and inferior aspects and the laceration of spinati muscles both make the likelihood of recurrent luxation probable. Too early and free movements after a dislocation may be an important factor. From experiments on the cadaver the author claims that no luxation occurs unless the medial and inferior aspects of the capsule as well as the coraco-humeral ligament are torn. The use of apparatus to control the movements of the shoulder is not always successful. Any operative treatment must tighten the anterior and inferior aspects of the capsule. To achieve this the author takes a flap of the biceps and *coraco-brachialis* with intact vascular and nervous supplies from the coracoid process. This is passed backwards and inserted into the triceps muscle and acts as a sling for the joint. In addition he advises plication of the joint capsule and the use of a strip of fascia between the greater tuberosity of the humerus and the acromion process.

Reconstructive Surgery of the Hand.

STERLING BUNNELL (*Surgery, Gynecology and Obstetrics*, September, 1924) discussing reconstructive surgery of the hand says that time, care and patience are necessary for effective repair. Atraumatic technique is essential; success depends on main principles and a host of tiny but important details. The functionating position of the hand is extension of the wrist, partial flexion of the fingers and the thumb held in opposition to the fingers. Joints should be mobilized before tendons are repaired, as a newly repaired tendon will not move a stiff joint. A bone should not be repaired at the same time as the tendon or joint. All dissections should be carried out accurately and with a tourniquet to avoid the trauma of sponging. Ischæmia can be maintained with safety for one hour; some reaction results if it is continued for two hours. The pneumatic blood pressure band will not cause paralysis. Local anæsthesia particularly with adrenalin lowers resistance. After trauma or infections tissues are densely indurated; an operation on such tissues results in an increase of scar tissue and it is therefore better to delay operation for a few months. The final result is not obtained until the softening process has taken place. This often takes a year. Special splints preferably of metal should be made for the particular case. Complete records with photographs showing limits of movement and measurements of joint motion and notes on joint, bone, tendon and nerve function should be made previous to the operation. The first thing is to bring joints into functionating position, so that the hand can be used. The range will be greatly increased in the course of time. Following infection or severe trauma all tissues are much thickened and inflexible. Stiffened finger joints may be mobilized by the use of slow, steady, mild traction. If the traction is too severe, it will cause pain. The tissue held on a mild stretch for weeks will grow longer. Forcible and elastic traction produces trauma. If adhesions are too strong for this method, they may be stretched under anæsthesia and held taut until the traumatic reaction is over. Several devices for the straightening or flexing of finger joints according to this principle, are described. Burns, infections or extensive injuries often leave contracting keloid scars which draw joints into extreme positions and limit their movements. Bunnell also finds treatment by X-rays and radium unsatisfactory, but obtains good results by complete excision of the scar followed by tubular pedicle grafting. This tubular graft is previously prepared in a suitable region by making two parallel incisions, lifting up the ribbon of skin and suturing into a tube with the epidermis outside. The ends remain *in situ*. The incision under the tube is closed after the edges have been undercut. After two weeks there should be union and a pedicle is then ready for grafting on the denuded area. The scar is excised and the joints extended; the capsules are cut if necessary and held in position by special splints sterilized by boiling. The core of the pedicle and its longitudinal scar are removed and the skin flap secured in place under normal skin tension. Good tactile sensation is acquired in the graft in several months. Keloid formation is racial, but is also due largely to tension. It does not re-form when properly removed. A wide keloid will often soften and a soft pedicle skin graft is made in it across the line of tension. Scars should, if possible, be placed across the line of tension. Long, medium incisions made in the palm of hand or finger are to be avoided on account of scar formation. When an incision crosses a flexion crease, it should be zig-zagged, so that later shrinkage will merely widen the angles. Nerves in the palm and other surfaces of fingers must be specially spared, as sensation is one of the chief functions of the hand. If nerves of finger have been severed, repair of tendon should be delayed until regeneration of nerve is complete after nerve suture. The author has carried out nerve suture in fingers with success fifty-four times. Sensation to cotton wool and to pin pricks returns throughout the fingers in five months. Free nerve grafts have been successfully used. The more peripheral the injury to the nerve, the better to repair. Severing the median nerve practically wrecks the hand on account of loss of tactile sensation of the thumb and of the index, middle and half of the ring fingers and the thumb no longer opposes the fingers. While the nerve is regenerating, the thumb can be held in opposition by adhesive plaster. If opposition of the thumb cannot be obtained by nerve suture, function can be regained by tendon transference. As a last resort the position or opposition can be maintained by ankylosis between carpus and metacarpus. The amount of work at one operation is limited by the time it is safe to maintain ischæmia.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, 30-34, Elizabeth Street, Sydney, on October 30, 1924, DR. ANDREW DAVIDSON, the President, in the chair.

Cranial Injuries.

DR. H. SKIPTON STACY read a paper entitled "Acute Cranial Injuries and Their Treatment" (see page 1).

DR. P. L. HIPSLEY read a paper entitled "Fracture of the Skull in Children" (see page 5).

DR. A. A. PALMER said that after the surgeon had finished with some of the patients suffering from fractured skull, they came to him. He only saw the bodies of persons who had died. He was afraid that his remarks would not help very much in regard to the question of treatment. There was considerable difficulty in the work at the morgue for no clinical assistance was provided and hence no satisfactory system existed for the keeping of records. His general impression was that more patients ought to have been operated upon, but after hearing Dr. Stacy's paper he thought that he might be wrong. He intended to review briefly the conditions found at autopsy during a period of twelve months from October 1, 1923, to September 30, 1924. He would exclude bullet wounds of the skull, for they were mostly suicidal and rapidly fatal and railway accidents, because other conditions were generally present as well. During this period he had examined the bodies of fifty-seven persons who had died as a result of cranial injury. Forty-eight of these had been males and nine females. This gave an indication of the greater hazards to which males were exposed. Thirty-five *post mortem* examinations had been made and in twenty of these instances death had occurred in hospitals. Of the twenty persons only two had been trephined. It was his impression that this proportion was smaller than had previously been the case. Of the eighteen persons not submitted to operation thirteen had suffered from fracture of the skull. In eleven obvious laceration of the under surface of the brain had been present in the middle and lateral fossæ. He thought that this laceration was one of the reasons for the failure of operative treatment. Recovery was unlikely after trephining in the presence of large lacerations. He did not mean that patients with laceration of the brain must die. He often found *post mortem* evidence of previous laceration. Dr. Stacy had referred to the danger of subsequent trouble occurring at the point of laceration. He recalled a patient of Dr. Thomas, of Manly. A husband had been in a playful mood and had hit his wife on the forehead with an iron bar. She had been trephined and recovery had taken place. The wife had refused to give evidence against her husband. A year later head symptoms had developed and an abscess had formed beneath the *dura mater* in the region of the laceration. In one instance a man, aged thirty-two years, had fallen and fractured his skull. The skull had been trephined at the site of the fracture and a bleeding artery secured. Death had occurred from laceration and hæmorrhage of the other side of the brain from *contre coup*. According to Dr. Hipsley's paper these fatal results did not take place very frequently in children. A second autopsy made by him during the year on the body of a patient was undertaken in the case of a boxer who had been trephined. This man, twenty-two years of age, had received a severe blow on the jaw and had fallen. Trephining had been carried out on both sides of the head, but death had occurred three days afterwards and the patient had at no time regained consciousness. At autopsy hæmorrhage had been found in the right occipital and temporal lobes. The question was one as to whether the hæmorrhage had been caused by the blow or the fall or disease. Microscopical examination had failed to reveal the presence of any disease of the brain and it had been assumed that the condition had been caused by the fatal blow.

Dr. Stacy had referred to the ease with which these cases might be missed. A man, aged sixty-one years had fallen unconscious in the street. He had smelt of alcohol and his stomach had been washed out at the hospital. He had regained consciousness and had been taken to the police cells. Next day he had become drowsy and had been taken back to the hospital where he had died on the following day from extensive fracture of the skull. There had not been the outcry which Dr. Stacy regarded as likely to occur. He thought that the coroner and the public were becoming educated in this regard.

In conclusion Dr. Palmer thanked Dr. Stacy and Dr. Hipsley for their papers and said that he had derived much pleasure from hearing them.

DR. T. FIASCHI, D.S.O., said that he had listened with great pleasure to Dr. Stacy's paper, which bore the mark of originality and was based on personal observation. He had considered the question mainly from one aspect, that of intra-dural pressure. Dr. Stacy had advocated the use of lumbar puncture and had achieved success by its adoption. Dr. Fiaschi agreed with him in regard to the value of this treatment. He also expressed agreement with Dr. Stacy in the small faith which he had in decompression. Dr. Stacy had considered chiefly simple fractures. These injuries were complex and compound fractures were of frequent occurrence. Here there was injury to the soft parts and the possibility of sepsis was introduced. Prompt interference was advisable in an attempt to secure perfect asepsis and in order to remove causes of subsequent epilepsy and other sequelæ. In discussing fractures of the base of the skull Dr. Fiaschi said that when the fracture communicated with the nasal fossæ, the condition was more serious than when it communicated with the ear. It was always as well to have the advice of an expert rhinologist in order to secure the best possible degree of nasal asepsis. Failing that he advised the packing of the nasal fossæ with iodoform gauze. Dr. Stacy had advocated the ligation of the external carotid artery in the treatment of middle meningeal hæmorrhage. He would not raise this to a routine method. If the middle meningeal artery was secured, it would be an excess of precaution. In regard to Dr. Stacy's other remark, he would be a careless surgeon who would mistake the internal for the external carotid artery and the ligature of the external carotid was not as difficult as that of the femoral artery in its lower third. In conclusion Dr. Fiaschi referred to the method of reduction of intracranial pressure by the rectal administration of magnesium sulphate, one hundred grammes of the salt to two hundred cubic centimetres of water. This method was held to be very effective, but he had no experience of it himself.

DR. STRATFORD SHELDON said that he took it that Dr. Stacy advised lumbar puncture for diagnostic purposes and its repetition for cases of intra-dural hæmorrhage and also open operation for middle meningeal hæmorrhage. With this dictum he entirely agreed and was of opinion that in operation for recent injuries the exploration should not include opening of the dura.

Dr. Stacy had not said much about diagnosis of extra-dural conditions. Dr. Sheldon often wondered why surgeons were so mean in their cutting operation of the scalp tissues when searching for a fracture. He thought they ought to strip the bone more freely. He had seen several instances *post mortem* in which the surgeon had made a limited search and missed the fracture by very little. A slow pulse was always present in cases of compression due to middle meningeal hæmorrhage. The onset of unconsciousness was slow, the patient became worse, stertorous breathing occurred and as the pressure rose, death followed. At *post mortem* examination, the brain was found anæmic from pressure, a large indentation corresponding to the extra dural clot. The difficulty about tying the middle meningeal was made too much of; it could, if necessary, be plugged in the bone. However, even if it did bleed, the urgent symptoms would not occur if there was a free opening in the skull. He had seen many patients lost because somebody had not done this operation. The number was probably two or three dozen. Many might be cured, but he saw only the fatal ones.

Dr. Stacy had referred to a normal cerebro-spinal fluid pressure of ten millimetres. What did this mean? Was

this the pressure in the ventricles of the brain or that recorded on lumbar puncture? He presumed that the pressure in the lower part of the spinal theca would be much greater than that in the cranial cavity. He would think that the normal pressure high up was infinitesimal.

Dr. Stacy had referred to traumatic neurosis and to the attitude of insurance companies' medical officers to persons afflicted with this condition. He had recently seen two such people who had suffered from fracture of the skull. Their condition was most pitiable. He thought that traumatic neurosis following cranial fracture was most horrible. It was his experience that these patients often went for a year or two without being able to do anything and he could assure Dr. Stacy that as far as he was concerned they got all the sympathy they ought to have. These patients would often weep and have no control over themselves.

Contre coup was the commonest of all events; the brain became lacerated in the anterior and middle cranial fossæ on the other side and this was often the determining factor. He had seen hæmorrhage into the ventricles from a cranial injury. He could not remember having seen *contre coup* in the frontal regions from a blow on the back of the head. On one occasion he had called Dr. Palmer's attention to pontine hæmorrhage which accompanied a cranial injury. He also had seen an intra-capsular hæmorrhage which had been caused by a trauma.

In conclusion, Dr. Sheldon referred to the case of a man whom he had seen in 1898. This man had struck his head against a tree ten years previously and when seen by Dr. Sheldon, had had ten fits a day. He had been an irascible individual who wished to fight everyone. One night while in hospital he had discarded all his clothes and had escaped from the institution in a naked condition. After recapturing the patient Dr. Sheldon had trephined his skull in two places. From the area of the brain lying immediately beneath a depression of the skull a sudden gush of fluid had occurred. Since that time the patient had been a respectable member of society; he had worked for twenty-five years in the Railway Department and his only trouble was some diplopia. On this account he had not been made a permanent railway employee.

Dr. Sheldon demonstrated the pieces of skull which he had removed from this patient.

DR. P. FIASCHI, O.B.E., regretted that Dr. Stacy had not spoken of injury to the sinuses. He referred to the late Victor Horsley's treatment for injury to the longitudinal and lateral sinuses. The application of a piece of *fascia lata* to a wound in the longitudinal sinus was the most dramatic thing in operative surgery. A longitudinal sinus could bleed like a gutter in a thunderstorm when the gutter ran down hill. He had applied this method many times in war surgery. Pads and gauze were useless, but in a few seconds a piece of fascia or a piece of muscle would adhere. The same might be said of the lateral sinus. Neither of these sinuses could be ligated.

Dr. Fiaschi also discussed the escape of cerebro-spinal fluid after fracture of the skull. While in New York with Robert Weir he had seen a patient with a fracture of the base of the skull who had lost from five hundred to six hundred cubic centimetres of fluid from his ear every day. The patient had recovered. While on active service with Dr. George Ball he had used *fascia lata* on the *dura mater* of the spinal cord. The result had not been satisfactory and the patient had died. He had used iodoform gauze for wounds of the orbit opening into the nasal fossa. He well recalled the last address of Victor Horsley at Anzac on October 15, 1915, on the subject of cranial injuries. He had maintained that general meningitis did not exist as a result of these injuries, but that the injured area became shut off as occurred in peritonitis. The lesion produced was due to cerebritis. Horsley had advised that the surface of the brain be washed with a one in twenty solution of carbolic acid or with a one in five hundred solution of perchloride of mercury.

In conclusion, Dr. Fiaschi referred to Harvey Cushing's work in France in cerebral surgery. He maintained that Cushing's work led to better results than had been obtained before.

DR. H. M. MORAN congratulated the authors of the papers. He thought that it was a mistake to refer to the subject as injury in the cranium. Fracture of the skull was commonly recognized, but it was the injury to the brain which was of such material importance. As a student he had seen ice bags applied to the heads of patients with fractured skulls. In his opinion this was merely a method of treating the patient's relatives. Later on it had been the custom to trephine all patients with fracture of the base. This added shock to an already shocked patient and trauma to an already traumatized brain. The treatment advocated by Dr. Stacy was a distinct advance. The main thing was to exclude extra-dural hæmorrhage. The history was not always classical. It was sometimes difficult to decide which side was affected. Most surgeons would remember occasions on which they had found it necessary to trephine both sides. Prognosis was very difficult. Sometimes great injury was followed by slight disturbance and slight injury might be followed by all sorts of weird symptoms. Another point of importance was the susceptibility of patients who had suffered from intra-cranial injury, to subsequent trauma. A boxer who was knocked out, had remained unconscious for several days with a low pulse rate. He had been knocked out on a previous occasion. After the second recovery he had been advised not to fight any more. He had done so, however, and after a slight blow had been unconscious for forty-eight hours. These patients were also very susceptible to the rays of the sun.

DR. W. VICKERS, D.S.O., asked Dr. Hipsley what his experience was of depressed fractures in babies. He had found that many babies became perfectly well after a few years. He referred particularly to the fracture produced at birth. Fractures with definite depressions should undoubtedly be elevated.

DR. A. A. PALMER in regard to the question of fracture involving the sinuses referred to one instance in which a man had sustained a fracture of the anterior cranial fossa with injury to the cavernous sinus and with a communication into the nose. He had satisfied himself that the man had died of air embolism. He thought that this must be a very rare complication.

DR. STACY in reply to Dr. Palmer said that fewer patients were operated on and this was because surgeons were disappointed with the results of operation. He had purposely not quoted any figures in regard to his results, for statisticians could be most beautiful liars. Jackson, of Chicago, claimed that he had reduced his death rate to 5%. His own results were not so good. In regard to lumbar puncture, he emphasized the fact that one performance was not sufficient. It was necessary to perform puncture in very bad cases three or four times daily. Sometimes puncture was not carried out early enough. His resident medical officer at Sydney Hospital had a standing order for the performance of lumbar puncture. His paper was based on his experience and he advocated lumbar puncture because of the results obtained at Sydney Hospital in his beds, both in the diminution of mortality and in the restoration to normal health. The lesion most often missed was middle meningeal hæmorrhage. The classical signs were not always present. Lumbar puncture in the latter condition yielded clear fluid under increased pressure. If there was a sub-dural lesion the fluid would be blood stained.

In reply to Dr. Fiaschi's remarks about compound fracture he said that the war had taught them to excise the wound. He was not keen on packing the nose, it might interfere with drainage. In regard to ligation of the external carotid artery he wished to say that it had been introduced by Murphy as an emergency measure. He had treated four patients with middle meningeal hæmorrhage within the previous few years. The two patients whose external carotids had been ligated, lived and the other two had died. He did not claim to lay down a rule from these cases, but the fact was significant. It was not always easy to find the bleeding point. He had had no experience of the rectal injection of magnesium sulphate.

In reply to Dr. Sheldon he said that the patients were always in the horizontal position, hence the spinal pressure was a fair measure of the intra-cranial pressure. He did not agree that the intra-cranial pressure would be low,

There was no doubt that the symptoms were due to high intra-cranial pressure. The patients surely died because of pressure on the vital centres in the medulla. In regard to chronic cases he had sometimes recommended decompression, but latterly with less confidence. Lumbar puncture was not a pleasant operation and could not be applied in chronic cases without the use of anæsthesia. Moreover, one lumbar puncture would not be sufficient; it would have to be done much more often. The patients on whom he carried out the operation, were more or less conscious. He had no doubt that the condition to which Dr. Sheldon had referred in his patient, had been a cortical hæmorrhagic cyst. The use of *fascia lata* in wounds of the longitudinal and lateral sinuses had been omitted from his paper. He had had experience of the efficacy of this method. He had found that pericranium was just as effective and it was easier to obtain because it was at hand. The methods used by Cushing in war surgery were rarely required in civil practice.

DR. HIPSLEY in reply to Dr. Vickers said that he had purposely avoided the question of birth injuries. It was his practice to elevate the depression. Depressed areas might be caused by pressure of the promontory of the sacrum in either vertex or breech presentations or by direct pressure from instruments. He elevated them in the first few days. It was a simple operation. A flap was raised, a groove was made with a chisel and the depression would come up easily. It could sometimes be raised with the point of a stout knife. If the surgeon waited, the depression might not come out and so it was better to operate.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Byrnes, Vincent Charles, M.B., Ch.M., 1923 (Univ. Sydney), Cameron Street, Kogarah.

Carmichael, Theresa Mary, M.B., Ch.M., 1923 (Univ. Sydney), 422, Marrickville Road, Marrickville.

Kirkpatrick, Edward Roger, M.B., Ch.M., 1924 (Univ. Sydney), Callan Park, Rozelle.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Featherstone, F. R., L.R.C.P., 1901 (Edinburgh), L.R.C.S., 1901 (Edinburgh), L.F.P.S., 1901 (Glasgow), L.S.A., 1900 (London), Lady Davidson Home, Turramurra.

Finlay, Cuthbert C., M.B., 1923 (Univ. Sydney), "St. Berner," Kemmis Street, Randwick.

Firkin, F. L., M.B., Ch.M., 1924 (Univ. Sydney), Wallsend.

Owen, H. M., M.B., Ch.M., 1924 (Univ. Sydney), 58, Cambridge Street, Stanmore.

Ponton, Ronald George, M.B., Ch.M., 1923 (Univ. Sydney), c.o. Dr. John Malcolm, Lithgow.

Rickard, Raymond Victor, M.B., 1924 (Univ. Sydney), Coopernook.

Jackson, R. J., M.B., Ch.M., 1924 (Univ. Sydney), c.o. Dr. J. Hornbrook, Hurstville.

CORRIGENDUM.

IN the report of the meeting of the Queensland Branch of the British Medical Association of October 8, 1924 (see THE MEDICAL JOURNAL OF AUSTRALIA, December 13, 1924, page 639), we have allowed an unfortunate error in printing to pass uncorrected. Dr. J. Lockhart Gibson said that he was quite incompetent to criticize the bio-chemistry of Dr. Duhig's paper, not that he was competent.

THE MEDICAL BENEVOLENT FUND OF NEW SOUTH WALES.

A MEETING of the Committee of the Medical Benevolent Fund of New South Wales was held on December 11, 1924, at the B.M.A. Building, 30-34, Elizabeth Street, Sydney.

A further sum of £50 was voted for the education of two sons of a deceased medical practitioner who had left his family totally unprovided.

The sum of four pounds to be paid at the rate of one pound a week was voted to the widow of a medical practitioner.

An application for relief was received from the daughter of an English medical practitioner who had died many years ago. This applicant was aged sixty-eight years, was entirely without means and was in great need. The sum of one pound a week for three months was voted.

Subscriptions are urgently needed and should be sent to the Honorary Treasurer, Dr. E. S. Littlejohn, B.M.A. Building, 30-34, Elizabeth Street, Sydney.

Obituary.

GEORGE ROTHWELL WILSON ADAM.

IT is with much regret that we have to announce the death of Dr. G. Rothwell Adam. Dr. Adam died in a private hospital in Melbourne on December 26, 1924.

University Intelligence.

UNIVERSITY OF SYDNEY.

A MEETING of the Senate of the University of Sydney was held on December 22, 1924.

Letters of condolence were received from various Universities of the Commonwealth, scientific bodies and others, conveying deep regret at the great loss sustained by the University through the death of Professor Hunter.

The Chancellor moved the following resolution, which was adopted by the Senate, the members reverently standing:

> That the Senate records with profound sorrow and with sense of irreparable loss the calamity that has befallen the University in the death of Professor John Irvine Hunter, M.D., Ch.M.
>
> He was only twenty-six and a half years of age.
>
> His occupation of the Challis Chair of Anatomy had lasted but two years. But in his short life, so greatly lived, he won universal affection by his beauty of character. He rose through his genius, as it were ideally, to represent whatever is best in University training, to become equal with the great anatomist by whom he was taught and whom he succeeded, to inspire the Medical School even from his undergraduate days and to embody the hope of the future for the whole University.
>
> By his researches which have solved questions that previously baffled the efforts of most eminent minds and have brought relief to and given promise of incalculable good for suffering humanity, he became recognized as one of the world's foremost anatomists and scientists.
>
> The Senate believes that his memory will prove a life-giving inheritance by which the spirit of the University will constantly be renewed in thought of his noble young example.
>
> That a copy of the foregoing resolution be forwarded to Professor Hunter's mother and his widow with an expression of deep sympathy from the Fellows of the Senate in the loss they have sustained.

The Trustees of the Australian Museum wrote offering odd bones and skull pieces of aboriginals unearthed at Port Hacking by members of the staff whilst on a collecting expedition. It is understood that these remains possess a pathological value. The gift was accepted with thanks.

The Chancellor announced that the Royal Assent had been given to the *University Amendment (Vice-Chancellor) Bill* and to the *University and College Lands and Victoria Park Bill.*

Professor M. W. MacCallum was unanimously appointed as the first Vice-Chancellor under the new act. Professor MacCallum, who is now on a voyage to England, has been asked by the Senate to accept a further period of leave in order to make inquiries in England concerning general University matters.

Correspondence.

KÖHLER'S DISEASE.

SIR: The subsequent history of our case seems to render unnecessary the employment of Mr. Kent Hughes's tentative suggestion of "exenteration of the bony structure of the navicular bone" in the treatment of Köhler's disease.

After the application of the first plaster boot the limp and pain disappeared in a couple of weeks. Upon removal of the plaster at the end of three weeks the swelling was visibly reduced and there was no tenderness.

At present, three months after the institution of treatment, there is no appreciable swelling, no limp, no pain and no tenderness.

Dr. Paul Tillet reports that radiograms support the clinical evidence of improvement. "The bone is much less dense, has increased in size and is perfectly regular in outline."

The mother states that at no time has the child been inconvenienced by the plaster boot, that he has been active on his feet and has, moreover, missed no schooling.

We submit that a non-operative treatment which entails no loss of schooling, no curtailment of activity and no risk, while offering a comparatively rapid and a certain cure, is surely preferable to the operative procedure suggested by Mr. Kent Hughes. Other cases reported have shown complete recovery, clinical and radiographic, under conservative treatment and our own case has made extremely satisfactory progress in three months.

Yours, etc.,

H. R. HODGKINSON,
L. SWINNERTON DUKE.

Orange, New South Wales,
December 18, 1924.

[Drs. Hodgkinson and Swinnerton Duke have forwarded to us a skiagram of the affected (left) foot, taken three months after the treatment was instituted. The navicular bone is much less dense than it appears in the skiagrams published in our issue of November 22 and its size is distinctly increased.—EDITOR.]

SIR: The suggestion by Mr. W. Kent Hughes for the surgical treatment of Köhler's disease in THE MEDICAL JOURNAL OF AUSTRALIA (December 13, 1924, page 643) is too radical to apply to a condition in which conservative treatment results in complete radiological and functional recovery in from six to eighteen months. All the cases so far reported are young and there is therefore no great need for quicker results and it is rather more than doubtful if a more certain result would be obtained by operation.

I have had under my care since November 14, 1924, a boy, aged five years, with the clinical and radiological evidences of Köhler's disease, the first signs appearing six weeks previously. He has been wearing a plaster boot for the past four weeks and all signs of swelling and tenderness have disappeared. I have no doubt that the prognosis in this case will conform to the rule of recovery as in all other reported cases, which has been mentioned by Drs. Hodgkinson and Duke. There does not seem to be any more indication for surgical intervention in this lesion than in von Perthes's disease.

Yours, etc.,

J. NEWMAN MORRIS.

83, Collins Street, Melbourne,
December 14, 1924.

THE SPAHLINGER TREATMENT OF TUBERCULOSIS.

SIR: I read with very considerable interest the article in your issue of November 22, 1924, by Sir David Hardie and also the editorial article on the Spahlinger treatment of pulmonary tuberculosis. I agree with the verdict of "not proven" which is given by Sir David, but do not think that the last has yet been heard of Mr. Spahlinger's treatment.

When at Montana-Vermala, Sir David unfortunately does not appear to have called upon Dr. Bernard Hudson, M.D., M.R.C.P., who is in charge of the English sanatorium there. Had he done so, he would have had the opportunity of seeing Mr. Spahlinger's treatment in practice.

I was at Montana-Vermala for some three weeks in January and February of this year and Dr. Hudson was kind enough to conduct me over the sanatorium and let me see the serum actually being given. The one case I had unique opportunities of watching was that of a personal friend with whom I was staying. He has now been at Montana-Vermala for rather over twelve months to date, during which time he has had a large number, between twenty and thirty, injections of the sera. His history is perhaps interesting, as he has had chronic pulmonary tuberculosis for eighteen years and for some time a few years back was nearly cured, but for the past three or four years the disease has been gradually increasing. His hope was that the climate of Montana-Vermala, coupled with the injections of Mr. Spahlinger's serum, would effect an ultimate cure.

Dr. Hudson at the time of my visit was injecting him every four days with the serum. He tried three different sera and two of them were found to be beneficial, whilst the third made the patient rather worse. On the day following the injections in every case, he remained quiet on the balcony, taking no exercise. His temperature occasionally had a slight rise, headache was pronounced, with a feeling of lassitude and loss of appetite. The sputum was increased in amount, though cough was only slightly more pronounced. A marked local reaction at the site of injection in the arm was always present.

But it was the effect on the day following these sensations which call for comment. He felt better in every way, ate well, had no headache, temperature (which by the way is always taken by the urine) was normal, cough was practically absent and the sputum reduced to about half the usual amount. The one serum which did not agree with the patient (two injections of which he had before it was discarded) did not produce these good results.

I would like to mention that the sera do not always seem to be uniform in strength, as on one occasion some three hours after injection, I went into the patient's room to find him in the middle of a rigor, with a temperature over 102° F.. The next day he remained in bed, but on the following day he felt in better health than before the serum had been given, with less sputum *et cetera.*

I give this case in some detail, hoping it will be of interest. Two other patients were being treated with the serum about this time, but the results though fairly good, were not so well marked.

Dr. Hudson, it may be added in conclusion, is a close friend of Mr. Spahlinger and every now and then goes to Geneva to get a fresh supply of serum, which accounts for the fact that he has it while others have not.

To sum up, the patient in his letters to me says that he

has never been in such good health and is now able to walk five miles a day, which is equal to nearly double that distance at a lower altitude. Whether this is due to Spahlinger or the Alpine climate or both, is hard to say. Dr. Hudson himself does not know.

I only give this to show that whilst the efficacy of Mr. Spahlinger's serum is as yet certainly "not proven," there may be something expected of it in time to come.

Yours, etc.,

G. H. GUTHRIDGE, M.B., B.S.

Yarraville, Victoria,
November 24, 1924.

Medical Appointments.

DR. L. O. SLEEMAN (B.M.A.) has been appointed a member of the Council of the Wonthaggi Technical School, Victoria.

* * * *

DR. WINIFRED KEENAN has been appointed an Honorary Obstetric Surgeon to the Queen Victoria Hospital, Victoria.

* * * *

THE following appointments have been made to the Honorary Staff, Alfred Hospital, Melbourne: Dr. J. R. Bell (B.M.A.), Out-Patient Physician; Dr. Carlton A. Ellis (B.M.A.), Clinical Assistant to Ear, Nose and Throat Specialist; Dr. M. Ashkenasy (B.M.A.), Clinical Assistant to Out-Patient Physician; Dr. F. M. Read (B.M.A.), Clinical Assistant to Out-Patient Surgeon; Dr. D. C. Worch (B.M.A.), Clinical Assistant to Out-Patient Surgeon.

* * * *

THE following appointments have been made to the Medical Staff, Women's Hospital, Melbourne: Dr. Edward R. White (B.M.A.), Honorary Surgeon to Infirmary In-Patients; Dr. R. N. Wawn (B.M.A.), Honorary Surgeon to Infirmary Out-Patients; Dr. Hubert S. Jacobs (B.M.A.), Honorary Midwifery Surgeon; Dr. F. J. White (B.M.A.), Resident Surgeon.

Books Received.

ANÆMIA: ITS CAUSES AND MODERN TREATMENT: WITH A CHAPTER ON NEURASTHENIA, by Arthur W. Fuller, M.D. (Edinburgh); Second Edition; 1924. London: H. K. Lewis and Company, Limited. Crown 8vo., pp. 138. Price: 6s. net.

A SHORT PRACTICE OF MIDWIFERY EMBODYING THE TREATMENT ADOPTED IN THE ROTUNDA HOSPITAL, DUBLIN, by Henry Jellett, B.A., M.D. (Dublin University), F.R.C.P.I.; Ninth Edition, Revised; 1924. London: J. and A. Churchill. Post 8vo., pp. 591, with illustrations. Price: 18s. net.

A TEXTBOOK OF MATERIA MEDICA FOR NURSES, by A. L. Muirhead, M.D., and Edith P. Brodie, A.B., R.N.; Second Edition; 1924. St. Louis: C. V. Mosby Company. Post 8vo., pp. 190, with illustrations. Price: $2.00 net.

CALORIMETRY IN MEDICINE: MEDICINE MONOGRAPHS, by William S. McCann, Associate Professor of Medicine, Associate Physician, Johns Hopkins Hospital; Volume IV.; 1924. Baltimore: Williams and Wilkins Company. Royal 8vo., pp. 98. Price: $2.25 post paid.

THE DIAGNOSIS AND TREATMENT OF THE INFECTIOUS DISEASES: A MANUAL FOR PRACTITIONERS, by Frederic H. Thomson, M.B., C.M. (Aberdeen), D.P.H.; 1924. London: H. K. Lewis and Company, Limited. Crown 8vo., pp. viii. + 208, with illustrations. Price: 7s. 6d. net.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xvi..

ADELAIDE CHILDREN'S HOSPITAL: Resident Medical Officer.

SAINT VINCENT'S HOSPITAL, SYDNEY: Assistant Honorary Surgeon.

THE QUEEN'S HOME, ADELAIDE: Resident House Surgeon.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited Mutual National Provident Club. National Provident Association.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Honorary Secretary, 12, North Terrace, Adelaide.	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

JAN. 6.—New South Wales Branch, B.M.A.: Council (Quarterly).
JAN. 8.—Victorian Branch, B.M.A.: Council.
JAN. 10.—Queensland Branch, B.M.A.: Council.
JAN. 10.—South Australian Branch, B.M.A.: Council.
JAN. 13.—New South Wales Branch, B.M.A.: Ethics Committee.
JAN. 14.—Tasmanian Branch, B.M.A.: Branch.
JAN. 17.—Northern Suburbs Medical Association, New South Wales.
JAN. 20.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JAN. 22.—Victorian Branch, B.M.A.: Council.
JAN. 24.—Queensland Branch, B.M.A.: Council.
JAN. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
JAN. 28.—Victorian Branch, B.M.A.: Council.
FEB. 3.—Tasmanian Branch, B.M.A.: Council.
FEB. 4 AND 5.—Federal Committee of the British Medical Association in Australia: Meeting at Melbourne.
FEB. 6.—Queensland Branch, B.M.A.: Branch.
FEB. 10.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 12.—Victorian Branch, B.M.A.: Council.
FEB. 12.—South Australian Branch, B.M.A.: Council.
FEB. 13.—Queensland Branch, B.M.A.: Council.
FEB. 17.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

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